The Builder.

VOL. XXVI.—No. 1344.

Foreign Improvements carried on by English Enterprise.

PART from the question of individual rectitude of character, there is much matter of importance involved in the subject of the recent trial at Brussels with reference to the execution of a certain foreign enterprise by English capital. Every professional man, engineer or architect, who has or who seeks for foreign practice; every builder or contractor who is disposed to turn his attention to Continental work; every investor of money who thinks 6 per cent. abroad better than 3 per cent. at home, has a direct personal interest in questions that involve the relations of English speculators or capitalists to foreign officials and to Continental Governments and tribunals.

Our own practice and habits as Englishmen differ so widely from those of the countries regulated by the *Code Napoléon*, that statements often come from the foreign journals that may produce an altogether erroneous impression on the English mind; and while we may find that, in the real principles of business, which are, in fact, the principles of human nature, there is little actual difference in different localities, we shall yet be made aware that, in the formal or conventional mode of the application of those principles, differences of the widest nature occur. It is important to look a little into this part of the subject.

We must not, for instance, assume the identity of a court of law and a tribunal of justice. We intend no backhanded blow at the morality of our neighbours; but we refer to what is palpable fact. The celerity and rigour, for example, with which judgment by default is sometimes rendered and executed under the *Code*, has no reference to the true equity of the case. Advantage can be taken of the absent, and at times is cruelly and most unjustly taken. Thus the personal character, enmity or friendship, political colour, or temper, of the judge, has a far more direct influence on the sentence of many foreign tribunals than an Englishman can well conceive to be possible. Above all, it must be borne in mind that the grand principle at once of English law and of English liberty, viz., that a man must be presumed to be innocent until he is proved to be guilty, appears to be incomprehensible to the foreign judge. Everywhere it is a misfortune to be accused, but on the Continent generally, accusation means not only inquiry into fact, but presumption of guilt. The accused is put on his defence, in a manner entirely contrary to our ideas of fair play. It is not the accuser who is called on to make out a definite case, on the failure or breaking down of which the trial is at an end: it is the defendant who is called on for explanations, and out of his very explanations the matter most damaging to himself is frequently extracted. The public prosecutor seeks, one is almost bound to believe, conviction rather than justice; and the judge but too often seems to think it his duty in every way to aid the public prosecutor. Such, indeed, was the habit of the English Bench under the Stuart kings.

Another point important to bear in mind is, the opposite manner in which an Englishman is viewed, and, for the most part, is treated, abroad, under different *phases* of his engagements. No one who has experience in this matter will hesitate to endorse this statement. An English capitalist, engineer, or architect, is, in the first instance, only applied to in cases of magnitude, of risk, or of difficulty. His aid is sought, in fact, for something a little beyond the power of the men who invite him. For anything within their means foreigners, of course, seek no English aid. Great inducements are therefore held out, and courtesy of every kind is extended to the insular stranger. Doors fly open at his approach, difficulties disappear at his suggestion, and even the law of the place assumes, or is made to appear to assume, a strange pliability to his will. If this occurs to a man but imperfectly acquainted with the language in which his new business is conducted, and if, moreover (as is pretty sure in that case to be the fact), he is somewhat dazzled by his sudden accession to an apparent influence and power which he could have never hoped to attain at home, it is not in human nature that all error should be avoided.

Let the enterprise, however, be set afloat; let the skill or the money of the Englishman supply the missing link; that which was admirable, even when only on paper, then assumes a more tangible form. The promised benefits appear, by outward and visible signs, to be at hand. Then comes the second phase. The patriotism, or the self-love, or the greediness of the inviters wakes up. What! is all the fruit of their enterprise to be reaped by the stranger? Against such a consummation the Continental habit of thought revolts. The case must be reconsidered, and hard will be the fight and long the odds but that some act or some omission of the Englishman, committed in sheer ignorance, or under assurance that it is unimportant or advantageous to his interest, will be unearthed, and he will find his own importance far less, and his friends' powers of taking care of themselves far greater, than he imagined in the first instance.

In the case of the Belgian Public Works Company it is clear that, whatever the amount of blame that may attach to any individual, a course of proceeding from which the English capitalist has too often had to suffer, has been resorted to in Brussels. It is admitted on all hands that a concession was made to two Englishmen, for certain works for the improvement of that capital. The Belgian Public Works Company (limited) was formed by the *concessionnaires* to carry out this concession. A subcontract was made by the *concessionnaires* to carry out a portion of their concession with Belgian contractors for an amount of 598,000*l.*, and this sum was made to cover the payment to the *concessionnaires* of 100,000*l.* It further appears, that this contract was accepted by the Belgian Public Works Company as an element of its constitution. A resolution of the directors is also published, which implicitly covers the arrangement between the *concessionnaires* and the sub-contractors; but, although this is the case, it does not appear that any one except the parties to that agreement was at that time aware of the nature, or, at all events, of the amount, of the payment thus stipulated to be made.

Now, as to such an arrangement, we conceive that the English shareholders of the Belgian Public Works Company,—a company constituted in London,—have the right to expect full information. It is a matter affecting the character of the directors, and one quite proper to be cleared up as between these gentlemen, in their quality as trustees, and their constituents. But what the *Bourgmestre* and *Échevins* of Brussels have to do with the arrangement (fair or unfair, honest or dishonest, as it may be) we altogether fail to perceive; and it will take something of a very different character from the attempt to rip up the private character and habits of the English *concessionnaires*, to which the President of the Tribunal Correctionnel of Brussels so freely lent himself, to convince the English public that the inquiry originates in any other source than the wish to get a possibly excellent contract out of the hands of the foreigners, who have given it a tangible value.

Let us hope that we are wrong. Let us trust that long and consistent experience has made us, for once, uncharitable. None the less do we advise our English friends to remember to what that experience points, and to be very sure of their exact *status* before investing labour, or time, or money in the numerous list of grand Continental improvements.

A point arises in this case which is of far more importance than the case itself. It is the question of the remuneration of the *concessionnaire*, or promoter, or founder, of a foreign enterprise. On this subject it is highly important that there should be no mistake. It is one on which our habits are so different from those of our French, and Belgian, and Italian neighbours, that misapprehensions are very likely to occur. We manage these things in a different way at home. It may be, perhaps, a wiser or an honester way; it is certainly a more cumbrous and expensive one. In a matter like the improvement of Brussels, one or two individuals obtain a concession or grant of an exclusive right under certain conditions. It is, in fact, a regularly articled contract. The one in point was entered into by the Corporation of Brussels, and approved by the King. The men who have given the time, and undergone the expense necessary for procuring this concession, naturally seek to be reimbursed, and generally to be somewhat more than reimbursed, for their trouble. They constitute or deal with a company, and in their arrangements with this company, to which they make over their concession, they provide for their own compensation.

So far so good. But the gist of the matter lies here. Does the incoming company know what it is paying for the purchase? This is a question of which the morality concerns both parties. Those who buy should settle it with their consciences no less than those who sell. Frequently, we fear, there is that blinking of the question on both sides which plain-dealing honesty must condemn. The subscriber is eager to gain a share in a lucrative enterprise, and does not stop to inquire whether the men who enable him to do so are properly remunerated for their labour. It is a short-sighted greediness. The seller is not only apt to take care of himself, but is, for the most part, too ready to do so in that silent and subterranean way which covers a more ample payment than he could venture distinctly to ask. In any case in which a concession is made over to a public company, the distinct arrangement of an adequate and defined remuneration to the *concessionnaires* should be brought prominently and intelligibly forward. If this is not the case, it is because there is something to conceal.

Two principles should be borne in mind, in the regulation of such compensation. Payments actually made should be fairly refunded. Further compensation to the promoters should be contingent on the prosperity of the undertaking. The mode in which this should be secured is matter of detail, but the general idea is clear. It is nothing but what justice demands. The allotment of a certain number of shares in the enterprise to the founders, is a usual mode of attempting this object; but it is one liable to abuse. What is required is, to ensure identity of interest between promoters and shareholders; or to make the remuneration of the former

depend on the prosperity of the latter. This is *not* ensured by delivery to the former of a set of obligations or securities which they can carry into the market, and which they may be induced or driven to dispose of on terms that are injurious to the *bond fide* shareholder. The reservation of a *tantième* on the dividend would appear to be a more rational and satisfactory arrangement.

Let the English subscriber to a company formed for foreign objects, then, first be sure that he has to deal with no vague indefinite claims, and that he is not, apparently, about to receive some unbought benefit. Let him remember that projectors are but human, and that any apparent disinterestedness on their part is dangerous in proportion to its magnanimity. Then let him look to the faith of the guaranteeing Government. Let him remember that he has no help from the English law, or English justice, or English diplomacy. He must be dealt with by the *lex loci* administered by the local judge. In no case of wrong can he hope for any ministerial or diplomatic support from his own Government, unless the foreign Government, or municipality, *break their own laws*,—a proceeding which involves a degree of clumsiness which he must not anticipate. He may rely on finding quite difficulty enough, when divergence of interest arises, without the other parties to the contract getting outside their legal rights. In this respect the conduct of every foreign Government to their English *employés* or creditors deserves attentive notice. The black book has a good many pages. Repudiation, in one form or another, is the law in a good many ministerial palaces. The Englishman who lets his money go to aid the schemes of those who have robbed his countrymen, deserves, in our opinion, to lose it. At all events, deserve it or not, he is pretty certain to do so.

Let us remember, too, when we are tempted to express a virtuous horror of a *pot de vin*, how we manage matters at home. What is the amount of secret service money, with the payment of which the capital account of most of our own public works has been burdened? Bribery! How shocking it is, especially when found out! But compensation to landowners, consideration for opposing companies, regard for vested interests, Parliamentary charges, legal charges, financial charges—for how many millions do they figure?

Parliament has just blinked this question. In the Act passed in July, 1868, for the future regulation of railways, it only needed one or two intelligible words to secure an answer to it. We can conceive that it was not altogether without purpose that these words were omitted. Could such a body as Parliament be conceived of as having a conscience, or were the consciences of the individual members liable to any qualms of remorse as to the action of each in their collective capacity, we can well understand why the Act of 1868 should have omitted to ask for a return of Parliamentary and legal expenses incurred in legalising our ill-considered and ill-distributed net of railways.

It is tolerably clear, however, that our Belgian neighbours are now disposed to strain hard at a gnat, very diminutive in its size as compared to the camels which we so easily gulp down at Westminster. The gnat must, we fear, have been a mosquito, and the venom of its sting must have been derived from its English origin. Take matters at the very worst, a sum of 100,000*l.* has been spent, or has been demanded, to cover the design, the legalisation, and the efficient organisation, of an enterprise involving a capital of 2,000,000*l.* We do not say that all has been quite fairly managed: we reserve our opinion on this score. But we intend no innuendo when we say that it would have been a fortunate thing for great Britain if our railway schemes had been legalised at so small a proportionate cost. The nominal value of the B shares, however, which has also to be taken into account, has not come out in the course of the proceedings. But the morality which at once reprobates the *pot de vin* to a foreign promoter, and winks at bribes on all sides to men at home to make the way smooth, does not very strongly commend itself to our respect.

KENSINGTON GARDENS.—The well-known fosse separating Kensington Gardens from Hyde Park, near the bridge over the Serpentine, has been filled up at the southern end, and the site added to the roadway, an iron railing marking the line of division.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS: OPENING NIGHT.

THE opening meeting of the session of this Institute was held on Monday evening last at the House, in Conduit-street, when Mr. W. Tite, M.P., the President for the ensuing year, delivered an opening address. There was a large attendance of members and associates.

The President said the growing success of the Institute was manifest from the large increase in the number of its members, and the consequent increase in its finances. All the topics in connexion with it were those of congratulation. The total number of associates, fellows, &c., in May of this year, was 623. In the year 1858 (ten years ago) the number of fellows was only 146: at the present time they amounted to 262. He apprehended there were very few architects in London who had not joined the Institute and endeavoured to further its objects. Having spoken of the large additions made to the library, he remarked that the papers read during the past session had not been very many, but they had been of very great interest. Prominent amongst these was a paper by Professor Ansted, "On the Relations of Geology with Architecture," and the discussions which followed the reading of that paper showed how important the one science is in relation to the other. A paper of great importance followed, by Mr. Digby Wyatt, who had gone to Paris on a mission of the Government connected with art. That paper was a very important one, and led to frequent discussions. It also improved their acquaintance with much that might be said to be novel in architecture. The last communication to which he would allude was that by Mr. Charles Barry, which treated of the improvement of structural architecture; and he showed how he had in the case of a large building with which he (the President) was connected as a governor,—Dulwich College,—introduced very successfully the use of terra-cotta instead of the more costly material of stone. He showed its cost, the nature of the material, and the incidents which led him to use it. Having, however, some experience himself in that material, he would caution those who might view these results in too sanguine a light as to its use. He had been told that the ante-fixæ of St. Pancras Church, which were composed of terra-cotta, had failed; and they knew that the statue of the Prince of Wales at Brighton, composed of the same material, dropped to pieces,—first an arm, and then a leg, and then became a complete wreck. To young architects, he would say they should be careful that the material was well and homogeneously burnt, and that they ought not to be too ready to adopt that with which they had not an entire acquaintance. He then referred, in passing, to a promise made by Mr. Beresford Hope to bring before the House of Commons the question of the conservation of ancient buildings and archæological remains. He trusted that his excellent friend would have an opportunity afforded him of redeeming that pledge in the next Parliament.

Up to this point, the President continued, he had adverted to subjects of unmixed satisfaction, but he now thought it his duty to refer to one which, with every possible respect for the persons most concerned in it, he felt to be one of considerable difficulty; nevertheless, he was called upon to notice it. The incidents to which he would refer were of great importance in their general bearing on the position of architects. It seemed to be the universal fashion that architects were to be ever exposed to competition in all directions. He had no reason to quarrel personally with competition, for he had been as unsuccessful as most men, and as successful. He, however, thought that all matters relative to the late great competitions should be thoroughly understood by those whom he addressed, because they had an important reference to, and bearing upon, their position as architects in general. The matter to which he specially referred was that in connection with the competitions for the New National Gallery and the Law Courts. By the assistance of a kind friend he had obtained the details of every step taken in both these matters. First, then, with regard to the National Gallery. The invitation to compete was issued on the 15th of February, 1866, to E. M. Barry, Banks & Barry, D. Wyatt, Street, and Scott, afterwards increased to eleven by the addition of G. S. Clarke, O. Jones, Penrose, Cockerell, and J. Murray. Mr. Scott ultimately withdrew, leaving ten competitors. Designs were sent in by ten competitors on January 1st, 1867. Judges of designs were appointed in January, 1867; viz., Viscount Hardinge, Lord Elcho, Mr. A. J. Beresford-Hope, Mr. W. Boxall, Mr. D. Brandon, Mr. R. Redgrave, Mr. W. Russell, Mr. T. Gambier Parry, and Mr. W. Tite. Letter by competing architects to Lord J. Manners, First Commissioner of Works, pointing out that it would be a breach of faith with them if one of them were not selected for employment: 16th February, 1867. Judges reported, 28th February, 1867, that they were "not prepared to recommend any one individual design for adoption," but that the design of Mr. E. M. Barry "for a new gallery," and that of Mr. Murray for the adaptation of the present building, exhibited the greatest amount of architectural merit. Appointment of Mr. E. M. Barry as architect of a new National Gallery, 16th June, 1868. There the matter rested, and for a considerable period of time nothing more was done in it. It might be that it was sufficiently embarrassing to the Government. The next competition to which he would advert was that with reference to the new Law Courts. In that case the arrangements were very different, and the complications which ensued were very great. Those arrangements were as follows:—February, 1866.—Five judges were appointed by the Treasury,—Mr. Cowper (chairman), Mr. Gladstone, Sir W. Stirling Maxwell; by the commission,—Sir A. Cockburn and Sir R. Palmer. December 23rd, 1865.—Treasury minute, that the committee of judges shall issue the invitations to compete, and their award shall be final. Determination to limit the number of competitors to six, and letter of invitation (enclosing printed instructions, which contained no promise to employ the successful architect) to Mr. Barry, to be one of the six. Negotiations, in the course of which the Treasury undertake to employ the successful architect, but introduce a condition forbidding him to undertake new work for three years after his appointment. March 21st, 1866.—Withdrawal of Mr. Scott and Mr. Barry from the competition, in consequence of this condition. April 20th, 1866.—Condition withdrawn, the number of competitors increased to twelve; Mr. Scott and Mr. Barry re-invited by letter of invitation, containing printed conditions, finally revised and signed by Lord Chancellor Cranworth. January 15th, 1867.—Designs sent in by eleven competitors, one having resigned. June 8th, 1867.—Messrs. Shaw and Pownall appointed judges of designs, at the unanimous request of the competitors, increasing the number of judges to seven. July 30th, 1867.—First award of the seven judges, to the effect that they considered Mr. Barry's design the best for plan and distribution of interior, and Mr. Street's the best as an architectural composition; recommendation, therefore, that those two gentlemen should be jointly employed in the respective departments named. Return of award to the judges by the Treasury, with the request that the judges would select one architect. November 28th, 1867.—Reconsideration of award by the judges, and statement by them that, having come to the conclusion that the design of Mr. Barry is the best in regard to plan, and the design of Mr. Street in regard to elevation, and having recommended the joint employment of those two architects, they could do no more. Reference of case to Attorney-General. Opinion of the Attorney-General that the award was invalid, and the Government free to make any appointment they thought proper. May 30th, 1868.—Appointment of Mr. Street. June 8th, 1868.—Letter of protest to Treasury by Mr. Barry, followed by others, to none of which any answer has been returned. Now, in Mr. Hope's inaugural address, in the year preceding his (the President's) nomination, he made the following remarks:—

"I was just observing that there were certain complications attaching to the competition for the New Law Courts. These were of an administrative character, and owed their origin to the fact that the Government had handed over no inconsiderable portion of the control which, in the case of most public buildings, would have been shared between the Treasury and the Board of Works, to a special commission created by an Act of Parliament, and comprising a large infusion of the legal element. These gentlemen set to work with a very sound principle strongly before them; and as was not unnatural, rode that principle a little hard. They assumed that the successful architect (or architects) ought to have made himself practically acquainted with the working of the different courts of law; and the inference which they drew from this undeniable proposition was, that it was needful for them to be excessively restrictive in the number of competitors chosen, in order to prevent the business of the courts from being interrupted by the frequent visits of curious investigators; and so they drew the line at six. This was palpably, in the eyes of all men, except the commissioners themselves, an extravagant application of their principle. Not to allude to any other objection, this re-

striction manifested considerable confusion as to the artistic obligation, contracted with the national honour, to produce the best obtainable building. However, it required a vote of the House of Commons to overcome the reluctance of this most respectable junta."

What Mr. Hope then predicted followed; but the result was not, perhaps, on the whole, unsatisfactory. The calling in of two professional judges—men of great eminence and practical skill—was no doubt the proper course to take to remedy the difficulty; and he believed the appointment of Messrs. Pownall and Shaw was satisfactory to all parties concerned. The result was equally satisfactory. The plan of Mr. Barry and the elevation of Mr. Street were severally declared to be the best. These two gentlemen, putting their heads together to erect these buildings, would have been satisfactory to the nation and to the profession generally. There was, moreover, precedent for this course of proceeding. In his (the President's) early days, Mr. Wilkins and Mr. Gandy had built one of the great club-houses as joint architects; and in his own case, Mr. Cockerell and himself acted as joint architects in the building of the London and Westminster Bank in the City, and in each case everything went on agreeably and conveniently. But in the matter of the New Law Courts discussion was indulged in to a large extent, and it ended in Mr. Barry being awarded the building of the National Gallery, and Mr. Street the New Law Courts; a result, however, which did not appear very much to please anybody, and which was a difficult question to determine, because each gentleman had equal merits; and the solution which he ventured at the time to suggest in the House of Commons appeared to him a reasonable one. The suggestion he made was this—that inasmuch as it was perfectly well known that the Law Courts, as designed, would occupy much more space than had been accorded them, the Chancery and Common Law Courts should be divided—one to be placed on the Thames Embankment, and the other in Lincoln's-inn; and that one should be entrusted to Mr. Street and the other to Mr. Barry. That suggestion met with no favour in the House, and thus the matter ended in a somewhat unsatisfactory manner. He would not pursue this subject further than to say, that they must all feel in these competitions that if the strictest adherence was not kept to the conditions put forth, it could not be expected that men of honour and talent would join in such competitions. The result might, he said, be satisfactory in the present instance. No man respected more than he did, and than all of them did, both the gentlemen referred to, for either one or the other would be sure to erect a creditable building. At the same time, if there was no disappointment on the one hand, or inconvenience on the other, he should still regret that some more satisfactory result had not been obtained. He would only add on this subject, that if competition were to be indulged in, it could only be done successfully, usefully, and wisely by the strictest obedience to the original agreement under which gentlemen went into these competitions. The President concluded his remarks on this topic by quoting an article from the *Builder*, of June 13th, 1868, which he said he thought very fairly expressed the whole extent of the difficulty, and the position in which they were at present placed. He then proceeded to remark that the general consideration of the position of architecture induced him to believe that they were held in higher estimation as a body than was formerly the case. In his address to the Institute in 1862 he remarked,—

"I cannot but express my hope that the profession I am attached to, and that I have followed for more than forty years, may receive from me, in a kindly spirit, a few words of caution, that we ought not to forget that the great principles of art demand something more than a mere patient reproduction of forms eliminated in and appropriate to other times, without sufficient reference to the great power given to us by new materials, demanding different treatment, and a new exertion of the imaginative faculty."

He strongly recommended young architects not to confine themselves to one style of architecture alone. It was no use being merely a Gothic architect or merely a Classic architect; they must try, as far as they could, to understand both, and not be led away by the mere fashion of the day. At the present time everything must be Gothic. It was excellent when well applied, but far from agreeable when not well applied. This style was carried a little too far in the present day. His friend Mr. Beresford-Hope, he knew, would join issue with him on this point, and would give them a design for a Gothic theatre; but he (the President) confessed he thought the Classic style better adapted for that class of buildings. He had done as much, perhaps, as most men in the Gothic way, and was one of the first to attempt a railway-station in that style. Whether he had succeeded must be decided by a visit to Carlisle station; but he had adopted other styles in France, particularly at Rouen, which perhaps on the whole were more satisfactory. Having congratulated Mr. Scott upon his success in connexion with the St. Pancras Station of the Midland Railway, the President passed on to notice the necrology of the Institute during the past recess, and referred more particularly to the death of Mr. Allason, whose father was an eminent and popular architect, and Mr. G. R. Burnell, the latter gentleman having been a most liberal contributor to the library of the Institute. In a passing allusion to the great public works in course of construction, he remarked that the Thames Embankment was worthy of the encomium that was passed upon it by his friend Mr. Beresford-Hope in his inaugural address. That work had been carried out so far in a comparatively small space of time. Whether they regarded the beauty of the material employed, or the excellence of the workmanship, or the usefulness of the work itself, the Thames Embankment stood forth as one of the greatest features of our age, and when completed to the extent contemplated on both banks of the river, it would mark an epoch in the history of architectural skill, besides being a work of the greatest possible convenience; and the Thames, which had been so long the great disfigurement of the metropolis, would be one of its greatest ornaments. He expressed his gratification at the satisfactory progress which was being made with the new St. Thomas's Hospital facing the House of Commons. It was being carried out by Mr. Carrey, and was founded on the principle of the Lariboisiere and other great French hospitals, and when completed would afford accommodation to 600 sick and wounded persons, and as a piece of architecture would be as creditable as it would be as a work of humanity. A great deal had been done during the last few years in respect of the architecture of the city of London. The great hotels especially were magnificent pieces of ornamentation, as well as being useful, and admirably adapted to the purposes for which they were built. They were based upon the best architectural principles, and were elegant and excellent in themselves. Evelyn had recorded in his works that, in passing through London he thought it "the ugliest city in all Europe for its bigness." He hoped they were now redeeming that great blot on their national taste and national means, and that London soon would be worthy of the great people and nation of which it is the capital. He could not say as much for the bridges, which now spanned the Thames in all directions. Old Blackfriars Bridge, which was a structure of surpassing beauty, and which was admired throughout Europe, had ceased to exist, and he thought, to the structure which was now taking its place, he might apply the words of Evelyn and say, "It would be the ugliest bridge in all Europe for its bigness." At the same time it would bring increased convenience and add to the comfort of the inhabitants, and no doubt it would carry them safely over the river for a very long time to come.

Mr. Beresford-Hope, in proposing a vote of thanks to the President for his address, said, while declining to follow his hon. friend in what he had remarked on the question of the two late great competitions, he would venture briefly to put the general question of competitions in another shape. If it were not for competition, he asked, how could the young members of the profession make their merits and genius known? Architecture, after all, resolved itself into the simple question of £. s. d., and those who decried competition should at least be able to bring some other plan forward by which the interests and the talents of all might be considered. As regarded the measure which he was to have brought before the House, he could only say that he had not done so for two reasons. The first was the extreme pressure of other business (having also been absolved of his pledge for that session by his friend Mr. Donaldson); and the second was, that he hoped to introduce the question as a branch of one more comprehensive; viz.—the necessity of having a great Minister of Art, Architecture, and Science. That minister should absorb the first Commissioner of Works, and some other offices, and should be an efficient public servant in that department, and upon whom, when elected, the eyes of Parliament and the country should rest. He (Mr. Hope) would like very much to see a Gothic theatre, and did not agree with the President in all he had said in regard to that particular, but fully concurred in the opinion that it was the duty of architects to study all styles of the art.

Mr. G. G. Scott had great pleasure in seconding the resolution which had been proposed, and in doing so would say that he hardly knew of anything in which he differed from the President in the remarks he had made in his excellent opening address. He was well satisfied, so far as he was personally concerned, with the results of the competition referred to, though perhaps the logical part of the question would not be so easily followed out. He concluded by thanking the President especially for his valuable gifts to the library of the Institute.

Mr. George Godwin, in supporting the resolution, said that the energy of the President was equalled only by his liberality. He would let the results of bygone competitions be regarded as bygones. He could not, however, help remarking that there were a great number of new competitions which appeared to be managed in a peculiar manner. He alluded to those for erecting asylums for the sick and imbecile poor. He would like to know who it was that named the six or twelve gentlemen who were selected to compete in each of these cases. It was a fact well known that in one or two of the cases at least all that could be said of the young men brought into these competitions was that they were untrammelled by anything like former work or former connexions, and would make their first appearance as architects of those asylums. Doubtless many of them would gain distinction, but he did not think that the men who had won their spurs should be passed over.

Mr. Charles Barry said that doubtless the architects for the asylums referred to were selected by the local authorities from motives of economy. The terms of the competitions were such that he did not wonder Mr. Godwin failed to recognise the names of those who had acceded to them. The subject had already attracted the attention of the council, and would be further considered by them during the present session.

Mr. A. H. Layard, M.P., though only an honorary member of the Institute, wished to call the attention of those present to the fact that the Government was about to erect the largest series of buildings that had ever been undertaken at one time. These comprised the New Law Courts, the National Gallery, the larger part of the Public Offices; and, besides, there would soon be commenced a building somewhere in the vicinity of South Kensington, for a collection of Natural History, partly taken from the British Museum. He would offer no opinion upon these buildings as to whether the style adopted should be Gothic or Classic, but he did wish that those words were forgotten, and that attention was turned more to the cultivation of a true English style. It was a question of national honour. They had got a magnificent site on the Thames Embankment, and they had now the opportunity afforded them of erecting a series of buildings which might, perhaps, exceed in grandeur those of any other country. He trusted that they might not fall into errors in the erection of these buildings. He was desirous that the Institute should direct public attention to this matter, and to commence doing so at once, as little time was to be lost. He was afraid that the decision in some respects of the House of Commons in the matter of the National Gallery had not been satisfactory, but it would be useless to attempt to get them to alter it.

The vote of thanks to the President was carried by acclamation.

THE LAW AS TO APPRENTICES.—James Pond, aged twenty-one, who had been an apprentice at Messrs. Doulton's pottery works, was on Thursday brought up at the Lambeth police-court, charged with having left several months before his term had expired. As similar cases had previously been allowed to pass with impunity, the young man's employers determined to make an example, and having obtained a warrant, he was captured at Glasgow. He said he had gone away because he could not earn sufficient money to provide for himself properly. The magistrate inflicted a penalty of 6*l.* for the loss of service, and 10*l.* costs, or in default of payment a month's imprisonment.

A WORD OR TWO ON "FALSE ECONOMY."

The contract for altering and enlarging the County Gaol at Carmarthen has just been accepted. The contractor is Mr. George Thomas, of Pembroke, and the amount of his tender 12,972*l.* Some of the tenders, we hear on good authority, were as high as 18,000*l.*, and Mr. Thomas's was the lowest. It is far from our intention on the present occasion to find fault with the Carmarthenshire magistrates, or indeed to say one word derogatory to the claims of Mr. George Thomas. On the other hand, we say most unhesitatingly that Mr. Thomas has performed some Government works which have given the greatest satisfaction, and he is at present making good progress with the fortifications at Tenby. But this reflection naturally thrusts itself upon us: that where a few men tendering for the same work,—by no means a large undertaking,—vary in their tenders from 12,972*l.* to 18,000*l.*, there must be a great blunder somewhere. In a discussion on this subject at the recent Carmarthenshire Quarter Sessions, the Earl of Cawdor alluded to the experience which the counties of Carmarthen, Cardigan, and Pembroke had so dearly purchased in the erection of the Joint Counties Asylum, a large building erected at Carmarthen some six or seven years since. Some of the readers of the *Builder* may recollect that, at the time the tender for the asylum was accepted, we called attention to the alarming difference in the amounts of the various tenders. We believe the lowest was about 24,500*l.*, and the highest about 42,000*l.* Well, the lowest tender but one was accepted, and the committee were justified in accepting it, inasmuch as the contractors were highly recommended. Now, what was the result of this? The sequel will show that the building is at present a monument to "False Economy." We are anxious to be as honest as possible in our statements, and we therefore only say what was publicly stated at the recent Pembrokeshire Quarter Sessions. It was there said that the work at the asylum was "very badly done." The committee "did all in their power to put matters right," but the work at last was so badly done that they "found it impossible to make them do it properly." The contractors used iron instead of copper nails to a large extent,—a number of the nails were smaller than the size agreed upon, and as a consequence, the committee has since been obliged to take a great portion of the roof off. The contractors placed a tank under the closets to receive the sewage. Of course this was a great nuisance, and it had to be removed. The cost of all this, including a new roofing to the building, was something considerable, and we are not surprised that some of the magistrates wished to know whether something could not be done in the matter, especially as the report of the Commissioners in Lunacy showed that a great deal of work was still undone. When a contract is accepted, and an architect is paid for certifying that the work is properly done, the public have a right to expect that the work is satisfactorily executed. The architect was well paid for his duties in the instance, if one of the magistrates was correct in stating that the remuneration amounted to nearly 2,000*l.* It was stated by the chairman that the committee were at present taking counsel's opinion as to whether they cannot recover from the architect the amount of any expense they may be put to in consequence of his neglect in not insisting upon proper work being done. Of course the committee are not to blame. Once they received the architect's certificate, it was simply their duty to order the payment of certain sums of money. At the same time some one must be to blame, and who that "some one" is, we suppose we shall shortly know, as it was stated that the committee were determined not to "let the fellows escape," but to take legal proceedings if the counsel's opinion warranted them in doing so. One of the speakers, who appeared a little anxious to smother the matter, could not but admit that some of the work had not been properly done, but added that it was done at a very low price and remarked that, as to Government inspectors, they did not want to quarrel with them, but they well knew that those gentlemen must complain: they were paid for doing so. Possibly there may be something in this, but it has little weight in the particular case under consideration.

However, our object is not to discuss the merits or demerits of this question: our object is simply to draw attention to this case, as a warning to the public in general, and public bodies in particular, against always accepting low tenders. It is a policy which often becomes very costly in the end.

RESEARCHES IN ROME.

Funds are needed to enable the British Archæological Society of Rome to continue their investigations. Some of our readers, when they see what has already been done, may feel induced to aid. Here is a list of the excavations and researches made to the end of July, 1868.

1. The line of the wall of the kings round the city of Rome, and the *sites of the gates* of Servius Tullius, fixed by the nature of the ground and the existing remains.

2. The principal chambers of the Mamertine prison discovered (the two small rooms usually shown are *the vestibule only*).

3. The sites of the Porta Capena and of the Piscina Publica fixed, by finding remains of the arcade of the Aqua Appia, where it crossed the Via Appia, passing over that gate from a reservoir at the foot of the Cœlian to the Piscina Publica.

4. Another Castellum Aquæ, or reservoir, of the time of Trajan, found on the cliff of the Cœlian, near the Porta Capena, with a series of five brick chambers of that period, and the *specus* of an aqueduct passing through it.

5. Remains of another important building in the same valley, part of which is of the time of Sylla, and part of the time of Nero, supposed to be the Ædes Camœnarum.

6. The mouth of the Aqua Appia, on the bank of the Tiber shown. The course of the *specus* of this aqueduct traced through a subterranean stone quarry in the Aventine.

7. The source of the Aqua Appia found in another very ancient stone quarry of the time of the kings, 7 miles from Rome.

8. The site of some important Thermæ found in the large vineyard to the north of the Porta Maggiore, and the building called the temple of Minerva Medica, shown to be a Nymphæum. Reservoirs and branches of several aqueducts found in the same vineyard.

9. Other reservoirs of the aqueducts found on the south side of the Porta Maggiore, near the Sessorium (now the monastery of S. Croce, in Gerusalemme); and the Specus Vetus, of Frontinus, found upon an old *agger* leading to the Cœlian, and along the Cœlian to the great subterranean reservoir at the arch of Dolabella.

10. The site of the Porta Trigemina, and of the Sublician (or wooden) bridge fixed, by finding remains of the gate and one of the piers of the bridge in the present *Salaria* or salt-wharf.

RAINFALL AND TEMPERATURE.

These two subjects are supposed to be very simple matters, and by many it is tacitly assumed that all is known that is worthy of examination. With the superficiality which is too frequently a characteristic of the present day, there are not a few men who say—"Oh! rain, yes: get a rain-gauge, put it in a tolerably clear space, and then you'll soon find out what the fall is."

During many years (see especially *Builder*, March 31, 1860), we have maintained and urged the paramount necessity of systematic regularity in, and increased attention to, the observation of rainfall. It is, therefore, with great pleasure that we draw attention to some most exhaustive experiments designed by Mr. G. Symons, carried on for some time by Col. Ward, at Calne, in Wiltshire, and now in an extended form continued by the Rev. C. H. Griffith, at Strathfield Turgis, Reading.

Prior to 1863 there was no publication which gave any trustworthy information as to the relative amount indicated by large and small gauges respectively, and consequently gauges differed almost infinitely in size and pattern. In Scotland, owing to the influence of Professor Fleming and Mr. Stratton, the prevailing size was only 2½ in. in diameter, while English and Scottish engineers mostly employed gauges 1 ft. in diameter. Mr. Glaisher recommened 8 in., and Luke Howard, with many others, had used a 5-in. diameter. Hence it was imperatively necessary to ascertain if size influenced the returns.

Again. There having been no bond of union nor standard authority in rainfall matters, the height of the funnels above the ground was even more variable than their size, the heights varying from nothing up to 30 ft. or 40 ft. Some experiments had been made on Westminster Abbey, York Minster, and some other places, to test the law of decrease in relation to the elevation above the ground; but the data were neither sufficient nor in a serviceable form for practical men. Hence it was necessary to ascertain the ratio of decrease due to the elevation above the ground.

Passing over the preliminary stages, we propose to describe, as succinctly as possible, the exact nature of the experiments now in progress, before which we must preface one word as to their *locale*,—a point of the first importance. Strathfield Turgis Rectory is square-built, with a few trees near, and the whole of the grounds, 30 acres, perfectly level and clear of trees. It is therefore as eligible a site as can be conceived.

In one part of the ground there are a set of gauges of the following diameters:—1, 2, 3, 4, 5, 6, 8, 12, 24 in., and also two square ones of 25 in. and 100 in. area respectively. The whole of these are similar in material, construction, mounting, and height above ground; therefore any variation between their indications is due to size alone.

In other parts there are four other sets; one for the purpose of determining the influence of elevation above ground irrespective of buildings, the gauges being mounted on lofty poles. Another set are perched in all sorts of positions on the roof of the rectory and out-buildings, in order to obtain the effect of such positions, and therefrom approximate corrections to be applied to the many observations previously made in various parts of the country in analogous (unsuitable) positions.

The third series consists of different patterns, funnels with the rims sloping at different angles, and variations of that kind; and the fourth and last are identical in all respects except the material of the receiving surface, among which are pot, glass, copper, japan, paint, and ebonite,—the last being apparently the best; but at present all are *sub judice*, and therefore we give no results.

We think the above will convince our readers that the questions we mentioned are now in a fair way to solution. Mr. Griffith is, however, by no means satisfied with doing what was never done before, and undertaking the arduous task of registering all these (42) rain gauges; and he has thermometrical work of the highest importance simultaneously in progress.

Almost every year, sometimes oftener, there crops up in the daily papers a discussion, more or less prolonged, as to "What is shade?" It generally arises in this way. A very hot day occurs. Forthwith sundry letters appear, giving temperatures varying, perhaps, 20°, and some of them hotter in the shade than others, possibly in the same town, are in the sun. Then some of those who have returned the lower numbers complain of the others, and it comes out that A had his thermometer on a post facing north, and forgot that the post got hot through and warmed the thermometer; that B was in a narrow space surrounded by houses,—in fact, might just as suitably have been in a well; that C's was outside a window, the glass of which reflected the heat on to the bulb; and so on. Now it is obvious that none of these positions is proper, and none comparable with any of the others; hence, many years ago thermometer stands were designed and they have since been adopted by all who have any claim to be considered observers of meteorological changes. Most unfortunately there have been several forms of stand adopted, differing as widely as a sentry-box and a meat-safe,—in fact, possessing no bond of similarity. Two years ago Mr. Symons drew attention to this anarchy in the *Times*, and expressed the hope that some person with leisure, and a clear open space, would take up the question, compare the various forms of stand, and determine their effect on the temperature and humidity recorded. Mr. Griffith having volunteered the space, and the time and trouble of observing, Mr. Symons has had stands made of the patterns suggested by Messrs. Lawson, Glaisher, Stow, Martin, Stevenson, Pastorelli, Morris, and Col. Sir H. James. Mr. Casella has provided the requisite number of thermometers (32). They have all been verified at the Kew Observatory of the British Association before commencing, and will be reverified at the close of the experiments.

We therefore conclude that meteorologists will

soon have the data for determining the relative influence of the various patterns of stand, and we hope they will agree to work uniformly in future; for in meteorology more than in any other science, uniformity of observation, of instruments, and of reduction, is all-important.

ON COLOUR IN CHURCHES.*

The question, "What are we to do in the way of colour?" is very often asked in these days of church restoration, and it is with a view of doing something towards finding an answer to this question that I venture to bring these remarks under your notice. Almost every one admires colour, but most people dread using it, partly from a notion of its great expense, and still more from fear of failure. Of course, by the employment of celebrated artists, the cost of picture decoration may be swelled to any extent; and it is very desirable, where cheapness is not an object, that the best art should be employed in our churches; but, under ordinary circumstances, very good effects may be produced with a limited number of colours, and at a comparatively trifling cost. In most instances more money is expended, and more time lost, in experiments than in executing the actual decoration itself, when the style and arrangement have been determined on. The best way to prevent this needless waste of time is to make the necessary experiments with paper patterns, fixed up on the walls of the church, so that the effect of the proposed ornaments at a distance may be judged of. If this is done, the work will commence with a much better chance of success, and almost always a great deal of disappointment will be saved, for a painter is then able to set about his work with tolerable certainty as to the result. It is, of course, impossible to lay down any special canons for the guidance of any one wishing to decorate a building, as circumstances will determine many points better than the most elaborate rules. For instance, a dark interior will bear an amount of brilliant colour and high tones which would be intolerable in a more fully lighted building; and, on the other hand, the faint colours, and delicate whites, greys, and buffs, which form such a beautiful harmony in an ordinary interior, would look poor and feeble in a gloomy little Norman church. Commonly, however (as far as we can judge from the specimens of colouring which keep turning up day after day in the progress of church restoration), there were but few colours employed in ordinary church work in Mediæval times, and the more elaborate decorations, and richer colours, were reserved for the most prominent situations in a church, as a reredos to an altar, or the roof of a side chapel. As time went on, the church furniture itself seems to have been chiefly depended on for richness of effect; and the magnificent screen-work of later days was made to stand out by its brilliancy in an otherwise quietly-coloured interior. The choir sittings, also, sometimes came in for their share of the general splendour, as we see (if I remember rightly) at Walpole St. Peter's, Norfolk, where the fronts of the book-boards (if I remember rightly) are decorated with very good pictures of saints under canopies. Indeed, this plan was carried so far that the bench-ends themselves were sometimes coloured with stencil patterns, as at Brington Church, near here, though, as far as I know, this is a very unusual instance. The use of colour as a means of increasing the effect of the architecture never appears to have entirely died out. Up to the end of the fifteenth century it was, of course, common enough; and though the rise of the Renaissance style probably changed people's ideas a good deal, yet the old method of ornamentation was still adhered to, though the details were changed. To prove this I have only to refer to the exquisitely delicate colouring in Bishop West's chapel, in Ely Cathedral, finished early in the next century, and to the richly-decorated tombs at Brington and other churches. The church of St. Margaret, at Ipswich, has a very remarkable roof, apparently of the sixteenth century, though late in the style. The north transept roof in Empingham Church, Rutland, is another very good specimen, executed probably about the same date; and the restoration of South Kilworth Church now in progress, has brought to light considerable remains of wall decorations of this period. In the seventeenth century we have the chapels of Lincoln and Jesus Colleges at Oxford; while the paintings of Thornhill, at St. Paul's Cathedral, and other places, and the pictured ceilings of St. Peter's at Arches, Lincoln, and St. Mary Le Wigford, in the same town, bring the art of permanent church decoration through the eighteenth century down almost to our own, when ornamentation of this kind certainly seems to have slumbered for a while, but only to be awakened with increased strength and power in the glorious Gothic revival of our own times. Perhaps I shall be doing the most service, and make myself best understood, if I describe the decorations of an imaginary church. Let us begin with the walls, and in doing so let us suppose that the common mistake of pointing the interior has been avoided, and that the walls have been carefully plastered, so as to receive the decorations. The whole will then be coloured, with a general groundwork, in which pale bluff had, perhaps, better predominate. Upon this ground bands of colour should be placed, the widths of which will be ruled by the architecture of the building. For instance, a kind of dado should be painted under the windows, reaching from the floor-line to the string-course, if there is one, and where no string exists, to give a finish a band of colour might be used instead, to sever the pattern, below the line of the window sills, from the decorations above. This coloured string-course would look very well if designed with a fawn-coloured pattern, on a chocolate ground, or *vice versâ*, as at Timworth Church. Above this, up to the height of the springing-line of the window-heads, some diaper or masonry pattern (as it is called) would fill up the space very well, upon the fawn-coloured ground, the divisions being marked out with red, black, or chocolate colour, and a small flower introduced into each square, in yellow or red, as at St. Alban's Abbey Church, and numberless other places; indeed, this masonry pattern is the commonest method of ornamentation which was used on the walls of churches. A second band of colour, repeating or counter-changing the tones mentioned before, might divide this pattern work from the upper part of the wall, where a less elaborate treatment might be used with effect (say a powdering of red roses or stars), till stopped by a third band of ornament immediately under the wall-plate. The eastern end of a church should be made to harmonise in point of tone of colour with the side-walls, of course, but would bear a richer and more ornate treatment.

The chancel of Ashley Church, in this county, has been coloured very carefully, lately, and the effect is in many respects highly satisfactory. Its arrangement will be found to agree pretty much with the plan of ornament which has been suggested, save that there is a band of canopies, running round the whole chancel, containing figures of prophets and apostles, painted with great care and very delicately coloured. The east end of Ashley Church is coloured in the same way as the side walls as far as the springing line of the east window, above which is a painting of our Lord in glory, surrounded by angels. This picture is rich in gold and colour, and adds very much to the effect of the interior.

The chancel of the church at Weston-by-Welland has also been entirely decorated very lately, and the general effect is harmonious and complete.

Holdenby Church has begun to put on its dress of many colours, but calls loudly for still further ornament.

The same may be said of Theddingworth Church, and Market Harborough Church was partially coloured some years ago; so you see we have not been altogether idle in this neighbourhood.

During the restoration of the little village church of Timworth, near Bury St. Edmund's, a most curious and valuable specimen of mural painting was laid bare, and it was especially interesting as showing the plan upon which the ornamentation of an entire chancel was arranged. It also followed in its general outlines the plan I have suggested. The lower part, or dado, was composed of a drapery pattern, in broad chocolate lines, at the top of which, just under the windows, ran a wide chocolate-coloured pattern, on a buff ground, of very bold and effective character. Above this was painted a series of wide architectural canopies, containing Scriptural subjects, among which "The Annunciation," "The Meetings of Saints Mary and Elizabeth," and "The Nativity," were tolerably perfect. The drawing was rough, but not bad, and the whole, when fresh and sharp, must have looked very well.

I am sorry to be obliged to speak of these curious paintings as things of the past. They have been totally destroyed, and a rough sketch of my own is probably the only memorial that remains of what was certainly a very interesting discovery. The paintings at Timworth had been so much injured and hacked about, in the fifteenth century (to make room for another system of colouring), that it was impossible to preserve them as decorations for the restored church; but every one who saw them must regret that photographs were not taken before the walls were replastered. The painting was of the thirteenth century.

Another very remarkable specimen of wall-colouring has been discovered lately in the parish church of Easby, near Richmond, in Yorkshire. Situated under the shadow of Easby Abbey, no doubt unusual care was taken with the decoration of this church, and the painting seems to be very good. The subjects are arranged in square panels, and there are large figures painted within the arches of the sedilia. It is to be hoped that these very valuable models for church decoration will be found to be in a sufficiently good state of preservation to make it desirable to retain them.

St. Alban's Abbey Church, which is a perfect storehouse of beautiful architecture and quaint things, has many very good specimens of mural decorations, but they are so much like the general run of such ornament, that it is needless to describe them here. One of the best examples near at home is to be found in Lutterworth Church, which is being repaired under the able guidance of Mr. Scott, and this wall-painting is to be restored. The masonry pattern is of unusual excellence, and I am glad to have it in my power to show you a drawing of it, very carefully prepared by Mr. Lea, of Lutterworth. The painting appears to be of the end of the thirteenth century.

The pillars and arches of our ideal church must claim our attention next. They should be decorated much in the same style as the walls, and in old days were very frequently divided into a masonry pattern, running with the actual stories, though this was not always the case.

At Lutterworth, both the pillars and arches retain a good deal of their original decoration. In the arches the chief interest is given by graceful running patterns, in chocolate colour, following the lines of the arches. Specimens of this kind of ornament are to be found also at Ketton Church, Rutland, and in still greater quantity at Uppingham Church. A small portion of a more highly-coloured example of arch decoration is to be seen on one of the arches of the south side of the choir at Rothwell Church. It has a very good effect. The next specimen is later in style, and formed part of the second system of colouring employed at Timworth Church, Suffolk. It is taken from an archway which had long been blocked up, and the painting was very fresh in consequence. I am afraid I must admit that in this instance the general groundwork was whitewash, in addition to which there was another circumstance connected with it which rather jars against our notions of the truthfulness which is such a just boast of Gothic work. The spaces were covered with a rough red mottling, on a yellow ground, which must have been intended for sham marble. The idea is not pleasant, but it certainly looked very well. There is also some marbling of the same kind at Ketton. This need not be copied, however, as a plain surface of colour, not too evenly spread, would look equally effective, in all probability. With regard to the pillars, a chevron, or some other bold pattern, was often adopted, as at Lutterworth and Hunstanton, in Norfolk. But one cannot help thinking that a good strong stone column does not want much to recommend it, and that it might generally be left pretty much to itself; its fine natural colour would, in most cases, add to rather than detract from the effect of the interior by contrast.

The subject of roofs is one which deserves great attention, but there will only be time just to allude to a few existing specimens. The roofs of churches being almost inaccessible to the destroyer, and only get-at-able with considerable difficulty, by that still more fearful person, "the cleaner up" of later days, they have been suffered to retain their original colouring more than other parts of our churches; indeed, there is scarcely an old building where more or less of this roof decoration does not exist, and the style of all the periods of Gothic

* A paper by the Rev. F. Sutton, Rector of Theddingworth.

may be made out pretty clearly. The roof of Lincoln Cathedral, though at present covered with white and yellow wash, was once carefully painted, and bits of ornament peep out here and there, to tell us how to restore it, when the day of restoration arrives. The whole of the roof of that vast church, St. Alban's Abbey, is coloured! The nave and transepts have flat ceilings, which seem to have been coloured in imitation of older work; but the choir was a beautiful fourteenth century vault in wood, covered with very good painting, quite worthy of being visited by any one interested in such matters. It appears to be the second decoration which the ceiling has had. There is at Chichester Cathedral, on the roof of the vestibule, to the present library some very telling painting of later character, which might be imitated with great success on a vaulted roof.

Ely and Winchester cathedrals also give us examples of colour on stone-vaulted roofs of different periods. It was, however, with the open timber roofs of the fourteenth and fifteenth centuries that the full glory of coloured ceilings came in. In these, carving and colour vied with each other for the mastery, and the combination must have been sumptuous and stately in the extreme.

Norfolk and Suffolk give us the best examples, perhaps, but there are very good specimens scattered all over England. The church at Brant Broughton, in Lincolnshire, has a pine roof of the Perpendicular period, most effectively coloured. It is in very fair preservation. The plaster ceiling of the neighbouring church at Welbourn, in the same county, is said to conceal another of like character; and at Christ Church, in Hampshire, a fine wooden roof (still retaining its original painting), is hidden by a sham stone vaulting. Almost endless instances, indeed, might be referred to, but time would fail, and patience, no doubt, wear out too; so it will be best to conclude at once, with a hope that what we find in the way of painting we may preserve carefully, and that new work, founded on the excellent old models which we have, may rise up on every side round about us, so that one by one our churches may regain that quiet beauty and refined delicacy of colouring which so many of them once possessed.

THE FAIRFORD WINDOWS.

WILL you allow me, as one who has studied closely the early schools of Germany and Flanders, and for many years (in companionship with my friend Mr. Alfred Bell) practised glass-painting as a profession, to express my entire agreement with your able correspondent on the subject of the Fairford glass, Mr. J. G. Waller, than whom none has fairer warrant for making his opinions public? I will further beg the favour of a little more space in which briefly to note how Mr. Tom Taylor (to whose "tender mercies" Mr. Waller is consigned by "B. A. A.") practically expresses his concurrence too, by his direction of what I cannot help considering the heaviest blow that has been inflicted on the hypothesis he writes* to support,—viz., Dürer's authorship in the Fairford glass.

Beyond all doubt, the crucial test—the proof of proofs, one upon which Mr. Tom Taylor well insists, as bearing with most cogent force on the origin of the glass in question—lies, not in appeal to the confessedly dubious evidence of the "Biblia Pauperum," "Block Books," &c., whose own authorship is a matter of dispute, but in the striking identity between the west window at Fairford and the celebrated triptych of the same subject at Dantzic.

The complete coincidence, patent between the picture and the window could not possibly have been accidental; for a description of one is virtually a description of the other.

That the artists of these works were followers of one school,—that the author of the glass was familiar with the picture, and borrowed largely therefrom,—is beyond the limits of reasonable question.

Mr. Tom Taylor ventures, indeed, more than this. He says,—"It is difficult to believe that the designer of the Fairford window and the designer of the Dantzic picture were not one and the same."

A claim of such personal identity of authorship as this must be received with reserve; but to all who have regarded the subject with an artist's eye, the magnificent composition at Dantzic and the Fairford window reveal, in every characteristic, the unmistakable signature of their common school. In the Dantzic picture the general scheme of arrangement, the graceful delicacy of form, the long-drawn attenuity and peculiar modelling of the nude, and the characteristic type of the faces, proclaim a completely representative example of the art of Memling and Van Eyk.

Dr. Waagen, speaking of Flemish pictures, and especially of that at Dantzic, declares that "this is not only the most important by Memling that has descended to us, but one of the *chefs d'œuvre* of the school."

It is difficult to comprehend by what unusual oversight Mr. Tom Taylor confounds a work so distinctly Flemish with the name of Dürer, to whose more robust style it bears no real affinity. On the other hand, it is as easy to understand how he was struck by the obvious, though unnecessary, clue which the picture affords to the origin of the window.

But Mr. Taylor seems much more certain that the window is referable to the Dantzic picture, than that the picture is referable to Dürer; for he says, "It is quite possible that the picture may be Dürer's, if [!], as I believe, the Fairford windows are his."

With the same probability the converse might be stated, viz.,—It is possible the windows may be Dürer's, if the Dantzic picture is by him. Reasoning of this kind is really all that has been brought forward on behalf of Dürer's claim from first to last.

I would refer to one other point, which is significantly passed over in silence by the advocates of the Dürer theory, to which it is a fatal difficulty. I allude to the canopies of the Fairford aisle windows. These canopies are as Flemish beyond question as is the Dantzic picture; which, thus corroborated, carries, I submit, the whole question of the school whence the windows issued. That, in the absence of documentary or historical evidence, the actual artist of the glass can ever be known, I do not believe, though an enthusiast might easily make much of a theory favouring Memling. The gentle gradations of style resulting from the influence of schools in ancient works where an artist's characteristics are distinguishable, less by divergence of manner than degree of power, present difficulties in the ascription of individual authorship to apocryphal works, that in face of them artists are slow to pronounce. To establish the plausibility of a surmise that a work of ancient art of unknown authorship may, by possibility, be by a given artist, settles no doubts, and is but a tantalizing way of showing, what is never doubtful in such cases, that it is of a certain school and a particular date.

But, sir, next to an auctioneer there is no one like your non-professional enthusiast for vaulting over obstacles of this kind. In riding his hobby he has no faint-heartedness. He fears no stumble. His foregone conclusions absorb his heart and soul, and difficulties but intensify his purpose. Where the artist fears to tread he rushes in and cuts the knot in triumph. In this way all obstructions vanish; and many are the works of art that have been baptised thus with names that would make their owners' hair stand erect were they with us to claim their own again.

JOHN R. CLAYTON.

*** The artist of the celebrated picture in the Church of Sainte Marie, Dantzic, mentioned above, is now understood to be Dierick Stuerbout, better known as Dirk Van Haarlem, from the place of his birth, and the earliest distinguished painter of Holland. Mr. Weale, long settled in Bruges, and whose name as an antiquary is well known by many of our readers, has recently met with a document, we are told, in which Stuerbout engages to paint the picture for a Milanese nobleman. Stuerbout was born in the year 1391, according to Mr. Crowe, and died at the age of eighty-seven, or in the year 1478; so that if this identification be certain, and we have no doubt about it ourselves, the Dantzic picture would seem to have been painted before Albert Dürer was born.—ED.

* In the *Gentleman's Magazine* for October.

MANCHESTER.—A site in Oxford-street has been chosen for the new buildings of Owen's College, plans for which are under consideration. The site will cost 29,100*l.* if the whole of a plot of building land containing 19,164 yards be secured; or 12,000*l.* if a plot of only 8,963 yards be taken.

THE WINTER EXHIBITION, FRENCH GALLERY.

THE collection here of cabinet pictures by British and (a few) foreign artists, 200 in number, is well selected and particularly interesting. Moreover, upstairs may be seen, without extra charge, Linnell's fine picture, "The Dusty Road." Foremost in the collection proper stands Mr. E. Long's "Christmas Charities in Seville" (165), brimfull of interest, both for the artist and the ordinary sight-seer. It shows us a well-dressed lady distributing alms to a group of beggars in one of the cathedrals. A sombre priest looks on approvingly, while the crowd is kept in order by a soldier who, under ordinary circumstances, would be the least interesting figure in the work, but who compels one to look twice at his bright uniform, and his whiskerless, moustached, amiable face, if only to see what the men are like who make the revolutions in Spain. The beggars are the most rugged, picturesque creatures in the world. The subject is well chosen, and admits of all that variety of character and beauty of colour in the rich-dyed and picturesque dresses, which have such charm for artist eyes, and in the fresh daylight effect of the lighting from the open door. As a composition, too, the picture is exceedingly well conceived. "The Twins" (69), by M. Bouguereau, is distinguished by great excellence of painting; it represents an infant boy and girl lying asleep upon some downy cushions and rich quilt, the curtains parted letting in a ray of bright silvery light which just strikes upon the pretty form of the one twin, and leaves the group in shadow. The subtle modelling of the soft little limbs and velvety skin is wonderfully true, and the colouring of the flesh is perfection.

In No. (50), "The Favourite Padre," by J. B. Burgess, a lean padre is set off by the plump form of his unctuous brother. The favourite padre gives his hand to be kissed by one of a group of girls, while a boy clings on his arm, and looks up at him with a face bursting with fun. Mr. Dicksee is more than usually strong. "The Sick Chamber" (86), W. Q. Orchardson, although mannered, lays hold of the spectator, and keeps its place in the memory. (22) "The Morning Meal," by L. Perrault; (34) "A Highland Loch," B. W. Leader; (61) "Prayer," Eug. Fines; (173) "Fancy Free;" and Mr. Archer's touching picture, "Desolate" (186), all deserve special notice.

PARTIAL DESTRUCTION OF THE RESTORED CHURCH OF ECCLESHALL BY FIRE.

THE parish church of Eccleshall has narrowly escaped being burned entirely down. On the morning of Sunday in last week the north aisle was found to be in flames. Engines soon got to work, but at length the roof of that portion of the building fell in, and shortly afterwards the roof of the nave was discovered to be on fire. In a little time, however, the flames in that part of the building were subdued.

The damage done is very considerable, but not so great as might have been expected. 600*l.*, it is said, will cover the whole, but there are 300*l.* or 400*l.* still unpaid for the restorations recently done. The whole of the north aisle is destroyed, and also a portion of the nave. Only the walls of the north aisle are left standing. The south aisle is uninjured. The chancel, with its rich oak carving, is safe, though the walls and roof are much discoloured by the smoke. The chancel aisle, in which the organ is placed, has received no material injury. The organ itself is a good deal damaged.

The conflagration, it is said, has been traced to one of the principal beams of the north aisle roof having been let into the side of the chimney of the warming apparatus. This apparatus, which supplies the building with hot air, had been lighted for the first time, as far as the services in the church were concerned. The beam appears to have taken fire, and the flames were communicated thence to the roof. The church was not insured.

The building had been re-opened for service on the 29th of April last, after a thorough restoration, which cost between 7,000*l.* and 8,000*l.*

The general feeling among the people of Eccleshall is a determination to get the church restored, if possible, with the same beauty and proportions which it displayed before the fire. This is the result of a meeting convened by the

Rev. C. P. Good, the vicar, and the churchwardens, in the Town Hall, to consider the steps to be taken respecting the damage done. More than half the 600*l.* required was at once subscribed. The Vicar presided, and, in a few opening remarks, explained the probable origin of the fire. He would not, he said, pretend to say who was to blame, or whether any one at all was to blame. Mr. Street, the architect, had written to express regret at not being able to attend, but Mr. George Wood, his chief clerk, was present at the meeting. Mr. Wood was asked as to the cause of the fire, and he said he had carefully examined the heating apparatus and the floors above it on the back of the arches, and also the flue leading to the chimney-stack, and he was of opinion that the fire originated in the stack on the level of the north aisle wall. One of the principal beams was set by the side of the flue at this point, and was protected by a fire-clay lump-lining 3 in. thick, supported at an inclination of about 40 degrees by an iron bar, so forming a bend in the flue. The actual face of the beam appeared to have had a clear space between it and the fire-clay lump of 3 in., which was, in his opinion, sufficient for the safety of the building. No doubt it would have been safer if the beam had been kept at a distance of 12 in. instead of 6 in., and this could have been done by the clerk of the works. In answer to a question, Mr. Wood said he, of course, considered the clerk of the works was the servant of the Restoration Committee, acting under the order of the architect, and he (Mr. Wood) had no doubt that had the clerk of the works reported the fact of the beam being so near the flue, and asked for special instructions, he would have been told to keep it at a greater distance. Mr. Wood, in conclusion, said that he had heard that the flue was used by the builder during the progress of the work to dry some timber. He believed the flue became filled with soot at the bend formed by the fire-clay lump, and when the fire was lighted it became red hot and communicated the heat through the fire-clay to the beam. Mr. Barker, who represented Messrs. Stuart & Smith, of Sheffield, who provided the heating apparatus, was present, and expressed an opinion that the fire must have arisen from the beam communicating with the chimney. Mr. E. Lyon, one of the churchwardens, said he felt very acutely that no insurance had been effected upon the church. He did not attempt to excuse himself for neglecting so important a matter, but any parishioner might have proposed to do so at the vestry meeting. The fire arose from a piece of carelessness. He considered that it was very important that the matter should be fully investigated.

ACCIDENTS.

A WAREHOUSE in Rigby-street, Liverpool, used for storing linseed and the like, seven stories high, has fallen in. On the fifth story about 50 tons of linseed were stored in a heap. Some men observed that the centre heap of linseed in bulk was subsiding; but they believed that this was caused by the "sliding" away of the outer ridge of the bulk. Both the upper and lower floors were deserted by the workmen because they "felt there was something coming;" but the machinery was working the press-room, and everything else was going on as usual, when a fearful crash was heard. The floor of the fifth story of the building had given way, the joists having apparently broken in the centre, and 50 or 60 tons of linseed in bulk falling on the fourth floor, on which there was a similar quantity of produce stored, broke that down, and, again descending on to the third and second stories, fell into the machine-room, where a number of pressmen, grinders, and others were employed. The falling of the floors was so sudden that not one of those engaged in the machine-room escaped, while several of the workmen employed in proximity to the scene of the disaster sustained severe injuries about the head and arms. All the centre timbers of the different floors appeared to have parted, leaving the flooring joists projecting from the opposite sides of the warehouse. Efforts were at once made to rescue the workmen inside the building; but after an immense quantity of *débris* had been removed, they found the bodies of four men amongst some broken rafters and ceiling-planks. None of the bodies were disfigured, and it appeared that the unfortunate men had been suffocated by the immense quantity of grain falling on them.

A new chapel has been blown down and four persons killed at Bill Quay, Shields. The chapel was in course of erection for the Wesleyans, in Swinburne-terrace, at the high part of the village, on a slight slope. During a strong gale of wind from the north-west the roof of the chapel came down, bringing with it nearly the whole of the south gable and a large portion of the north gable. The south gable fell bodily upon an adjoining house, a two-story one, crushing in the roof and the floors of the upper rooms, and completely burying the whole of the occupants in the ruins. Besides the four killed, others were more or less seriously injured.

Halifax has been also visited by a strong storm of wind and rain; and at Bolton Brow, Sowerby Bridge, a house fell, killing a woman and her infant. Both were shockingly crushed. The house has been in a dilapidated state for some time, but there was no immediate sign of its fall.

THE EARTHQUAKES.

THESE commotions are still reported from one end of the world to the other; and now we have a slight indication of them in our own favoured land. On Friday in last week, between ten and eleven at night, the west of England was shaken by earthquake. There has also been an earthquake in Ireland. All these were comparatively very slight however; but it is said that the Baltic has been agitated to an extraordinary degree, subsiding 3 ft. and upwards below the usual average, and then rising a foot above that average. Nearly all the steamers plying between Cronstadt and St. Petersburg went aground, a circumstance unprecedented.

From north to south of New Zealand a curious tidal phenomenon was observed on the 15th August. The sea rushed out and in with extraordinary violence, and in some places in the South Island great damage was done from the sea going far over the usual high-water mark. On the 17th shocks of earthquake were felt over a larger portion of New Zealand than is usually subject to them. The Chatham Islands have been visited by three tidal waves, causing great loss of life and property. The settlement of Tupunga, on the north side of the island, felt the greatest force. It was entirely destroyed, no mark being left to tell where it stood. The ground was completely covered with sand and seaweed. The inhabitants barely escaped with their lives. The sea went inland about 4 miles. The settlement of Waitangi sustained great loss. Houses were shifted, and carried out to sea. There have been great floods in Chili, and many persons drowned. Doubtless these floods, as well as those of Switzerland, and also the previous drought, have all had something to do with the other phenomena.

OPENING OF YORK CORN EXCHANGE.

THIS building, which has just been completed, and is situated in King-street, has been formally opened. The erection has been carried into effect through the medium of a limited liability company.

The building is 74 ft. long, 63 ft. wide, and from the floor to the apex of the lantern light about 54 ft. in height. The roof, which is an open timber one, is partially supported by two rows of iron columns, which are fixed about 11 ft. 6 in. from the side walls, from which spring semicircular laminated ribs spanning over about 38 ft., which forms the central portion of the Exchange. These ribs form part of the truss of the roof. Along the whole length of the building is a raised lantern roof, the whole of which is glazed, and gives an ample supply of light, and the side lights of lantern are made to open. It is also heated with two of Gurney's patent stoves.

In addition to the large room there is a settling-room about 38 ft. long and 21 ft. wide, and in the front there is a pile of warehouses, comprising several floors in height. The entrance to the Exchange is through a portion of the warehouses, and is 10 ft. wide. There is also an orchestra in the large room, and the interior is finished in an ornamental style.

The architect was Mr. G. A. Dean, of London and York; and the contractors were Messrs. Weatherley & Rymer, of this city. The clerk of the works was Mr. Vicars, who is also the architect's principal clerk. The total cost of the premises, including corn-stands and fittings, and alterations to the warehouse, will be about 3,000*l.*

The sub-contractors for the work were Messrs. Close, Ayre, & Nicholson, for the iron work; Mr. Rawlings, the plasterer; Mr. Pearson, for the painting and decorating; Messrs. Hodgson, the plumbers; and Mr. T. Wood, the slater.

THE ASYLUM AT LEAVESDEN.

WE learn from the daily papers that the foundation-stone of the first asylum for the imbecile poor of the metropolis, to be established under the provisions of the Metropolis Poor Act of 1867, was laid at Leavesden, Woodside, about four miles from Watford, on Saturday last. The Metropolitan Poor Act of 1867, introduced by Mr. Gathorne Hardy, constituted what is termed the Board of Management of the Metropolitan Asylum District, consisting of sixty members, three-fourths elected from the thirty-nine parishes and unions comprised in the metropolitan area, and one-fourth nominated by the Poor-law Board. The Board are to provide asylums for imbecile poor, and hospitals for the reception of the poor who are afflicted with fever and small-pox. Two asylums, each to contain 1,560 patients, are now being erected, one at Leavesden for the north side of the river, and one at Caterham, near Croydon, for the south side. The Leavesden site contains 76 acres, and cost 100*l.* an acre—7,600*l.*; Caterham site contains 72 acres, and cost 80*l.* an acre—5,750*l.* There is to be accommodation in each of these asylums for 860 females, in six separate blocks, and for 700 males in five separate blocks. The estimated cost of the building, furniture, clothing, &c., for the Leavesden Asylum is 128,000*l.*, and 129,000*l.* for the Caterham Asylum. The Board have obtained sites for fever and small-pox hospitals, as follows:—for north-west district, at Haverstock-hill, Hampstead, about 8 acres, cost 15,544*l.*; for north-west district at Homerton, about 8 acres, cost 11,812*l.* 10*s.*; for southern district, at Stockwell, about 7½ acres, cost 15,075*l.* The Board have approved the design for the fever hospital at Hampstead, for 104 patients, submitted in competition from six architects, by Messrs. Pennington & Bridgen, of Manchester. The designs for hospitals at Homerton, to receive 184 fever and 102 small-pox patients, and at Stockwell for 150 fever and 102 small-pox patients, are to be ready soon. Up to the present time the Board have made a call of one-eighth of a penny in the pound on the rateable value of property in the unions and parishes of the districts (about 16,000,000*l.*) for defraying the expenses of the Board for the years 1867-8, and a further call of a similar rate payable 31st December next. The funds required for the erection of the asylums and hospitals are raised by loans on the rates, repayable with interest by equal annual instalments in twenty or thirty years, as the provisions of the Act direct.

We have already given a general view and plan of the asylum at Leavesden.

THE MONMOUTH WORKMEN'S INSTITUTE.

THE opening of this Institute took place on the 15th ult. The site is in Monk-street. It has been founded by Mrs. Jones, of Anore Hill. The plan of the building is a parallelogram, 52 ft. 6 in. by 32 ft. 6 in., with a transeptal wing 28 ft. by 15 ft. on the south side, and it stands detached in its own ground, so that the front and two sides may be seen from the street. It has two stories. The ground floor, 12 ft. high, comprises a spacious entrance vestibule and hall with mosaic floor, from which an inner vestibule is entered through an ornamental glazed wooden screen, with self-acting folding doors. From the inner vestibule the following rooms are entered: the reading and news rooms, 32 ft. by 16 ft., lighted in front by a coupled window, and in the side by two windows of a similar character; the library, 20 ft. by 13 ft. 6 in., fitted with ranges of book-shelves, book-case and cupboard; between this room and the former is an arched opening, fitted with a counter and glazed sliding screen from which books, &c., may be issued by the librarian; a committee-room, 14 ft. by 12 ft., which can also be entered from the reading-room. From the outer vestibule a stone stair,

6 ft. wide, with an ornamental balustrade of hammered wrought-iron leads to the lecture-hall 48 ft. by 28 ft. and 20 ft. high. This hall is fitted throughout with moveable seats, and has at the east end a raised semicircular platform; midway on the south side, and above the doorway is a pointed arcade of two openings to a gallery over the landing and staircase. This arcade is divided by a circular column, with an enriched and foliated capital, and the front of the gallery is of ornamental hammered iron works. The gallery is approached by a circular stair from a cloak-room, forming a mezzanine story on the first landing of stairs. Beneath this mezzanine, and approached downwards by a few steps from the outer vestibule, are a lavatory room and other conveniences, and in the basement, are a boiler-room for tea purposes, cellars for coals, stores, &c., a pump, and other appliances. All the interior is lighted with gas, the lecture-hall having a large gilt starlight pendant. The whole of the woodwork and fittings are stained light oak and varnished.

The general style of the edifice is of Italian Gothic character; the exterior is constructed with polled red sandstone walls, and Bath stone dressings and strings, interspersed with blue forest stone bands; the shafts of the columns of entrance doorway and windows also being of blue forest stone polished. The roof is of Carnarvon countess slate, in bands of purple and grey; the whole forming a contrast of colour. The noticeable features are the gable front, 54 ft. high, surmounted by a banneret of hammered iron, coloured and gilt, with crystal points. In the middle of the gable is the large pointed window of the lecture-hall. This window is subarcuated as a triplet on circular columns with foliated capitals, and the spandrel is filled in with the arms of the foundress surrounded by foliations on a diaper of conventional character. Between the lower windows is a circular tablet of polished royal marble, upon which in Lombardic letters is the following inscription:—

"This Free Institute
for Working Men
Was founded and endowed by
Mrs. Matilda Jones,
of Ancre Hill,
A.D. 1868."

The entrance doorway, flanked with moulded jambs and disengaged columns, with foliated capitals and moulded bases, is finished above with a bold octagonal balcony carried on moulded brackets and corbels, with pierced spandrels. The site is enclosed with a low wall and coping, carrying ornamental hammered-iron railings; and the entrance-gates are supported by circular pillars of red stone, with moulded bases and pyramidal, polygonal caps enriched with carving.

The contractors were Mr. C. Lawrence, jun., Mr. George Webb, and Mr. H. Elias. The cast-iron work was supplied by Macfarlane, of Glasgow; the wrought-iron work by Cormell, of Cheltenham; the carving by Mr. J. Willis. Mr. Benjamin Lawrence was the architect.

WARMING AND VENTILATING BUILDINGS.

By the process of respiration a man absorbs 20·39 cubic inches of oxygen, and produces the same quantity of carbonic acid per minute. The absorption of oxygen represents the preservation, and the production of carbonic acid the waste, going on in his body from birth to death. Nitrogen is inactive, or rather serves by diluting the oxygen to moderate its energy, and diminish the violence with which burning would otherwise go on. Without oxygen a man could not exist, nor could a fire be kindled; and no more nor less than the normal amount of oxygen in the atmosphere is essential to existence and well-being. If a man breathes air diluted with carbonic acid for any length of time it produces headache, lassitude of mind and body, sickness and death. To do so, in fact, is a process of slow poisoning. The temperature of the air that he expires is always the same as that of his body,—namely, 98°; and, as it is warmer and lighter than the surrounding atmosphere, it ascends during the pauses between exhalation and inhalation above his head. In the open air, which is always in motion, it ascends at once and is dispersed and diffused never to return, and his lungs take in fresh air at each inhalation. In a room, however, it rises to the ceiling, where, if no aperture exist for its escape, it remains until it becomes cool and loses its levity, or is displaced by other ascending currents, when it descends, diffuses uniformly throughout the air in the room, and the occupant breathes it over again.

The air in rooms is also further deteriorated by the aqueous vapour continually emanating from the lungs and skins of the occupants; and also by the products of combustion from gas, oil, and candles burnt therein. A man exhales from his lungs and skin 720 grains, or 1½ ounce of aqueous vapour per hour. When the temperature of the air is high and the dew-point is low his lungs exhale an increased amount of vapour, while the quantity exhaled from the skin decreases. On the other hand, when the dew-point is high the air is less absorbent of moisture, and the amount of vapour increases from his skin and decreases from his lungs. Excessive heat, moisture, or dryness of the air render it insalubrious, and injurious to health. When air contains but little moisture its dryness rapidly absorbs vapour from the skin and lungs, contracts the blood-vessels at the surface, and surcharges others. Hence a due amount of water should always be present in the air to render it fit for respiration. Air is saturated with moisture when a cubic foot at 56° contains five grains, and at 66° seven grains of water. The quantity of moisture that should be present in air to enable it to absorb the vapour given off by the lungs and skin is when a cubic foot at 56° contains 3·4 grains, and at 66° 4·7 grains,—that is, when at 56° it is 1·6 grains, and at 66° 2·3 grains short of saturation. The 720 grains of aqueous vapour per hour exhaled by the body will then saturate 450 cubic feet of air per hour at 56°, and 330 cubic feet at 66°. An agreeable air exists in a room for respiration when the dry-bulb thermometer reads 50°, 60°, and 70°, and the wet-bulb reads at the same time about 45°, 54°, and 63°, giving dew-points of 40°, 49°, and 58°, successively; or when humidity is 66, complete saturation being represented by 100.

It is remarkable that, although the nature of the atmosphere, and the evil effects arising from breathing respired air have been known for nearly a century, houses are still built without any provision for bringing fresh air into the rooms and for taking vitiated air out of them, other than what comes in and goes out by doors, windows, and fireplaces. When the doors and windows are closed, air can only enter the rooms through the crevices around them; and the fires, together with the huge smoke-openings above them, devour the air, and cause strong cold draughts to rush through the crevices and across the rooms in the direction of the fireplaces, driving back the radiant heat and preventing it from warming the apartments. The object of the fire-grate should be, besides the cheerful glow of the fire, to warm the air and walls remote therefrom as much, and to use the fireplace for ventilation as little as possible. The combination of warming and ventilating by the fireplace alone has always ended in failure, and always will. A separate supply of air should be brought by a tube direct from the outer air under the floor to the sides of the fireplace, to feed the fire. The fire would then act almost independently of the air supplied to the room for ventilation. The area of the tube, and also of the chimney throughout, should be from 30 to 40 square inches, and the orifices of both should be provided with sliding regulators to contract and enlarge them at pleasure, and to close them in summer when fires are not required. This arrangement would check the cold draughts of air across the rooms from the doors and windows, and cause the floors to be warmer. Rooms, however, should not be dependent for the supply of air upon the chance ingress of it through the door and window crevices, but should be provided with sufficient tubes and apertures for its admission and distribution near the floors, either directly from the open air or indirectly from the staircase; and such tubes should be subservient to the admission of moderately warm air in winter and cool air in summer. Neither should rooms be dependent for the discharge of vitiated air wholly upon the fireplace, but should be provided with sufficient apertures in or near the ceilings, communicating with heated tubes, or with the smoke-flues, rising through the roof into the open air. Fresh air would then readily make its way into, through, and out of the rooms, partly by the fire-places, and chiefly by the openings above. This would render the rooms comfortable and salubrious. The currents should be gentle and under control, and sufficient to perform the office of purification.

Good ventilation is not less important than good drainage. In the eye of the law houses are not considered habitable unless they are properly drained. Neither should they be considered fit for occupation unless every room is properly ventilated also. In a sanitary point of view the one is as necessary as the other. Men and women who dwell in crowded towns, and work and sleep all their lives in close rooms without ventilation, and so continually breathe air contaminated with the waste of their bodies, go down to their graves seventeen years earlier than the men and women who dwell in the country, and work in the green fields, and breathe the fresh air. As the poor toilers for bread in pestiferous houses and workshops in towns are shut out from the balmy breeze and the glorious sunshine; from the sight of the primrose, and the smell of the hawthorn; from the wild birds' songs in the hedgerows, and the lark's merry trill in the clear blue sky; the least those who live upon their toil can do for them is to make their homes and surroundings decent and habitable. There always have been, and always will be, poorer classes; that is inevitable; but there is no reason why, added to their poverty, the poor should be poisoned with foul air. It is sickening to enter some of the sties called houses in which thousands upon thousands of human beings eke out their miserable existence. The Hottentot and the Esquimaux are better housed in their mud-and-snow huts. It is marvellous that such barbarism and refined civilization should co-exist to the extent they do in our cities and towns.

When we enter unventilated rooms, especially bedrooms, that have been occupied for some hours, we immediately feel an unpleasant closeness and odour, and resort to the expedient of opening the doors and windows in order to pass currents of fresh air through the rooms. This in summer is not objectionable; but in winter, or in damp or chilly weather, it is not only inconvenient, but sometimes dangerous, to those who are exposed to such draughts. In crowded assembly and ball rooms, unprovided with adequate ventilation, the opening of doors and windows is particularly objectionable for the same reason. Now, in order to preserve the body from the pernicious gases which continually emanate from the lungs and skin, it is absolutely necessary that every room in which we live, and work, and sleep, should be provided with means for conveying away the vitiated air engendered therein as fast as it is produced, and for replacing it with pure air. The public generally have no voice in the construction of houses, but are obliged to take what is provided for them. The proper ventilation of houses does not receive that attention which its importance demands. If architects and builders would only think how much the health and comfort of those who are to inhabit the houses they design and build depend upon good ventilation, they would not hesitate to make special provision for it in every room. In future Building and Sanitary Acts clauses should be inserted compelling adequate provision for ventilating dwelling-houses, under proper supervision, other than by doors, windows, and fire-places. As the editor of the *Builder* truly observes, in reference to a kindred subject, "it is an imperial question of the greatest and gravest importance."

When air within and without a vertical tube, open at both ends, is of the same temperature, the weight of the internal and external columns is equal, and no motion ensues; but immediately heat is applied inside, the air therein expands, a portion overflows, and the remainder, being specifically lighter than the air outside, is forced upwards by the preponderating pressure. In this way an ascending current is produced through the tube; and as long as the internal air is warmer and lighter than the external air there will be an inflow at bottom and an outflow at top, and the velocity of the current will be in proportion to the difference between the temperature of the two columns.

Air expands, becomes light, and ascends by heat; and contracts, becomes heavy, and descends by cold. The ventilation of rooms and buildings, is dependent upon currents produced in the air by difference of temperature, whatever expedients may be adopted to cause it. Air expands $\frac{1}{491}$ of its bulk for every degree that its heat is raised; that is, 490 cubic inches at 32° become 491 cubic inches at 33°, and so on, increasing 1 cubic inch for every additional degree of heat. Hence, if the air inside a ventilating tube or a chimney be 127° and that

outside be 65°, the expansion inside will be $\frac{48}{490}$, equal to one-eighth nearly, or its weight will be one-eighth less than the external air. If the tube or the chimney be 50 ft. in height, the pressure causing the draught will be equal to $62 \times \cdot0020408 \times 50 = 6\cdot32$ ft.; that is, 43·68 ft. in height of air at 65° will balance 50 ft. in height at 127°. Now, according to the law of gravitation, the velocity of the current through the tube or the chimney in feet per second will be equal to eight times the square root of the difference in height of the two columns; that is, equal to $\sqrt{6\cdot32} = 8 \times 2\cdot5 = 20$ ft. per second; and if the area of the tube or the chimney be 15 square inches, the discharge of air will be equal to $15 \times 20 = 300$ cubic inches per second, or equal to $300 \times 60 = 18{,}000$ cubic inches per minute. As, however, friction reduces the velocity about one-tenth, the actual discharge will be about 16,200 cubic inches per minute. From this example the flow of air into and out of rooms through ventilating pipes or chimneys may be easily calculated.

The system of warming rooms by hot water circulating through lengths and coils of iron pipes placed in the rooms has been successfully practised since 1816, when the Marquis de Chabannes first introduced it into this country. The principle upon which this system acts is that of convection, which consists in the particles of water at the bottom of a boiler, heated from below, gradually expanding and ascending through the colder particles above, which sink down by their gravity to be heated and expanded and to ascend in their turn, until the whole of the water in the boiler is raised to the boiling temperature, namely, 212°. If the boiler be closed at top, and a pipe filled with water be continued thence to any required height, then laterally to any reasonable distance, and finally down into the boiler near the bottom, the hot water in the boiler will rise through and displace the cold water in the ascending pipe until all the water therein also boils, or nearly so. Then, as the weight of the cold water in the descending pipe will be greater than the weight of the hot water in the ascending pipe, motion will necessarily set in towards the boiler; and thus complete circulation will be established, which will continue so long as the descending-pipe parts with heat, which it does by radiation and conduction, and the water in the boiler receives additional heat from the fire.

This system has been aptly compared to the circulation of the blood. The heart is the boiler, from the left side of which oxygenized or bright scarlet blood is driven through every part of the body. In its course it loses its scarlet colour by parting with the oxygen, and becomes of a dark purple colour by taking up carbonic acid instead. It finally enters the right side of the heart, and is strained through the lungs, where, exposed to the action of the air by respiration, it parts with the carbonic acid and takes up oxygen, which changes the colour again to bright scarlet. It then proceeds once more on its journey endued with life and nourishment to preserve and sustain the body.

Great heat is evolved from hot water circulating in iron pipes; and air heated from this source is much purer and healthier than air heated by any other artificial means. The hot-water pipes usually carried from the kitchen boiler to the roof and back again, for supplying a bath, or the upper part of a building, with hot water, are also capable of heating currents of air, which would not only warm the various rooms, but thoroughly ventilate them as well. These objects could be accomplished far more efficiently and economically than have hitherto been done, by carrying the hot-water pipes up and down in air tubes, communicating with the external air and with the rooms, and constructed within the thickness of the partitions which divide the rooms from one another, as shown by the following diagram.

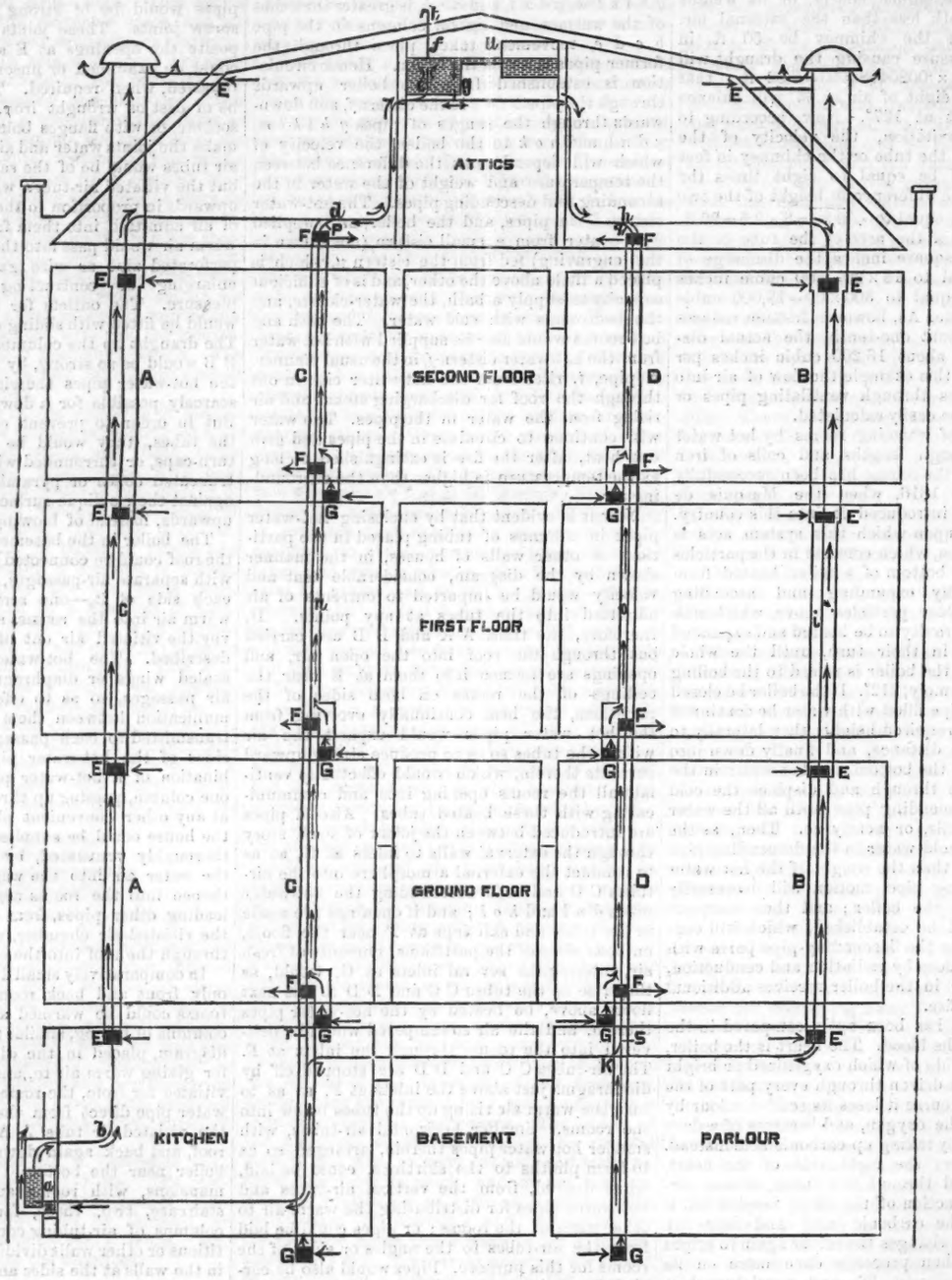
From the top of the boiler, *a*, at the back of the kitchen fire, a pipe, *b c d e*, ascends in an air tube, A A, fixed in the partitions dividing the rooms, to a closed cistern, *f*, placed in the roof. From the bottom of this cistern a pipe, *g h i k l m*, descends in another air-tube, B B, built in the partitions, and returns to the boiler near its lower extremity at *m*. Two other pipes, *g d n l* and *h o k*, branching out of the last-mentioned pipe at *g* and *h* at top, also descend in air-tubes C C and D D, concealed within the partitions, and join the return-pipe at *k* and *l* at bottom. Now, as the water in the boiler becomes heated by the kitchen fire it expands and ascends in the pipe *b c d e* to the cistern *f*, and as the pressure of the colder and heavier column in the pipes *g h i k l m*, *g d n l*, and *h o k*, is greater than that of the warmer and lighter columns in the pipe *b c d e*, movement takes place through the former pipes towards the boiler. Hence circulation is established from the boiler upwards through the pipe *b c d e* to the cistern *f*, and downwards through the ranges of pipes *g h i k l m*, *g d n l*, and *h o k* to the boiler, the velocity of which will depend upon the difference between the temperature and weight of the water in the ascending and descending pipes. The hot-water cistern *f*, the pipes, and the boiler, are supplied with water from a small cistern (not shown in the engraving) fed from the cistern *u*, which is placed a little above the other, and is of sufficient capacity to supply a bath, the water-closets, and the bed-rooms with cold water. The bath and bed-rooms would also be supplied with hot water from the hot-water cistern *f*, in the usual manner. A pipe, *t*, rises from the hot-water cistern out through the roof for discharging steam and air rising from the water in the pipes. The water will continue to circulate in the pipes and give out heat, after the fire is extinguished, so long as the temperature is higher than the surrounding air.

Now it is evident that by enclosing hot-water pipes in columns of tubing placed in the partitions or other walls of houses, in the manner shown by the diagram, considerable heat and velocity would be imparted to currents of air admitted into the tubes at any points. If, therefore, the tubes A A and B B are carried out through the roof into the open air, and openings are formed into them at E near the ceilings of the rooms on both sides of the partitions, the heat continually evolving from the hot-water pipes would expand the air within the tubes so as to produce strong upward currents therein, which would effectually ventilate all the rooms opening into and communicating with these heated tubes. Also if pipes are introduced between the joists of each story through the external walls to inlets at G, so as to conduct the external atmosphere into the air-tubes C C and D D surrounding the hot-water pipes *d n l* and *h o k*; and if openings are made in the tubes and skirtings at F near the floors, on both sides of the partitions, currents of fresh air, entering the several inlets at G, would, as they rise up the tubes C C and D D to the next floors above, be heated by the hot-water pipes therein, and the air so tempered would be delivered into the rooms through the inlets at F. The air-tubes C C and D D are stopped off by diaphragms just above the inlets at F, so as to turn the warm air rising up the tubes below into the rooms. Smaller horizontal air-tubes, with smaller hot-water pipes therein, arranged so as to form plinths to the skirtings, could be laid, when desired, from the vertical air-tubes and hot-water pipes for distributing the warm air to other parts of the rooms; or pipes could be laid from the air-tubes to the angles or sides of the rooms for this purpose. Pipes would also be carried from the centre of the ceilings to convey away the products of combustion from gas-burners, oil lamps, &c., into the air-tubes A A and B B.

In summer, when cold air only would be required to circulate within the rooms, the warm-air inlet-tubes C C and D D could be converted into cold-air tubes by turning off the hot water circulating in the pipes within them by stop-cocks placed at *p* and *q* at top and at *r* and *s* at bottom. This arrangement would tend to increase the ventilating power of the tubes A A and B B at such times by the increased heat which would be given off by the hot-water pipes therein. Additional cold-air tubes, of small size, could be laid from the external air alongside the tubes leading to the inlets at G for supplying cold as well as warm air to the rooms through the inlets at F for regulating the temperature when desired. Screens of perforated zinc, or wire-gauze, of different degrees of fineness, would be introduced in the inlets of the tubes which convey fresh air from the external atmosphere to the tubes C C and D D, for filtering the air of blacks, dust, and other impurities; and the bottom of these inlets would slope upwards and inwards in the thickness of the walls for discharging the filtered impurities outside the walls. The openings at E and F would be arranged so that a brush could be introduced and worked up and down in the tubes to remove dust, and thus keep them clean. Long diaphragms would also be fixed opposite the openings at E and F, to prevent the transmission of sound or communication from one room to another. The hot-water pipes would be of strong wrought iron with screw joints. These joints would be placed opposite the openings at E and F, so that they could be examined or unscrewed, and the pipes removed, when required. The air-tubes would be of cast or wrought iron, or stoneware, with sockets, or with flanges bolted together, so as to make the joints water and air tight. The warm-air tubes would be of the same size throughout; but the vitiated air-tubes would increase in size upwards in proportion to the additional quantity of air admitted into them from each floor. The warm air would pass into the rooms at F through perforated zinc or wire gauze, with slides for enlarging or contracting the openings at pleasure. The outlets for the vitiated air at E would be fitted with sliding ornamental gratings. The draught up the columns of tubing A A and B B would be so strong, by the heat given off by the hot-water pipes therein, that it would be scarcely possible for a down-draught to occur. But in order to prevent eddies beating down the tubes, they would be fitted at top with turn-caps, or surrounded with projecting hollow truncated cones or pyramids. Eddies striking against their oblique surfaces would be reflected upwards, instead of blowing down the tubes.

The boiler in the basement and the cistern in the roof could be connected by an ascending pipe, with separate air-passages, formed and bolted on each side of it,—one serving to admit fresh warm air into the rooms, and the other to convey the vitiated air out of them, as previously described. The hot-water pipe would have sealed wings or diaphragms between the two air passages, so as to effectually cut off communication between them; and heat would be transmitted to each passage from the opposite sides of the hot-water pipe. With this combination of a hot-water pipe with air-tubes in one column, passing up through the staircase, or at any other convenient place, all the rooms of the house could be supplied with warm air, and thoroughly ventilated, by carrying pipes from the outer air into the warm-air passages, and thence into the rooms near the floors; and by leading other pipes from near the ceilings into the vitiated-air chamber, which would pass out through the roof into the open air.

In comparatively small dwelling-houses having only front and back rooms on each story, the rooms could be warmed and ventilated by two columns of tubing, similar to A A and C C in the diagram, placed in the dividing partitions, one for giving warm air to, and the other for taking vitiated air from, the rooms, and carrying a hot-water pipe direct from the top of the boiler up the vitiated-air tube A A, to a cistern in the roof, and back again down the tube C C to the boiler near the bottom. In large houses and mansions, with rooms surrounding a central staircase, two, three, four, or more pairs of columns of air-tubing could be built in the partitions or other walls dividing the rooms, and also in the walls at the sides and ends of large rooms, with hot-water pipes carried up and down within the tubing from the kitchen boiler, or from a separate boiler specially arranged for the purpose in the basement, to a cistern and cold-water supply arranged in the roof. Houses already built could be warmed and ventilated by this system, by fixing columns of air-tubing, shaped like pilasters, and occupying but little space in the angles or other parts of the rooms, and making good the cornices and skirtings round them. Hospital wards, infirmaries, barracks, and workhouses could also be agreeably warmed, and effectually ventilated by this system. Gentle currents of fresh warm and cold air could be brought into the sleeping and sick wards between the beds near the floors, and vitiated air discharged at the ceilings; and, in addition to this, hoods, with pipes leading from them into the vitiated-air tubes, could be placed over the patients, so that the exhalations from their lungs and skin would rise at once into the hoods, and pass away without being diffused through the air in the wards. However perfect the construction of water-closet apparatus may be, foul air escapes from them into the closets when the valves are opened, and also at other times. It is extremely desirable therefore that water-closets, especially stacks of them in hospitals, barracks, &c., should be well ventilated. This may be easily done by carrying a small column of tubing, with a hot-water pipe in it, up in the partitions or walls of the closets, with openings into it from under the seats, and at the ceilings. In this way the foul air would be effectually drawn off into the upper atmo-



THE WARMING AND VENTILATION OF HOUSES.

sphere. The drains could be ventilated by the same means.

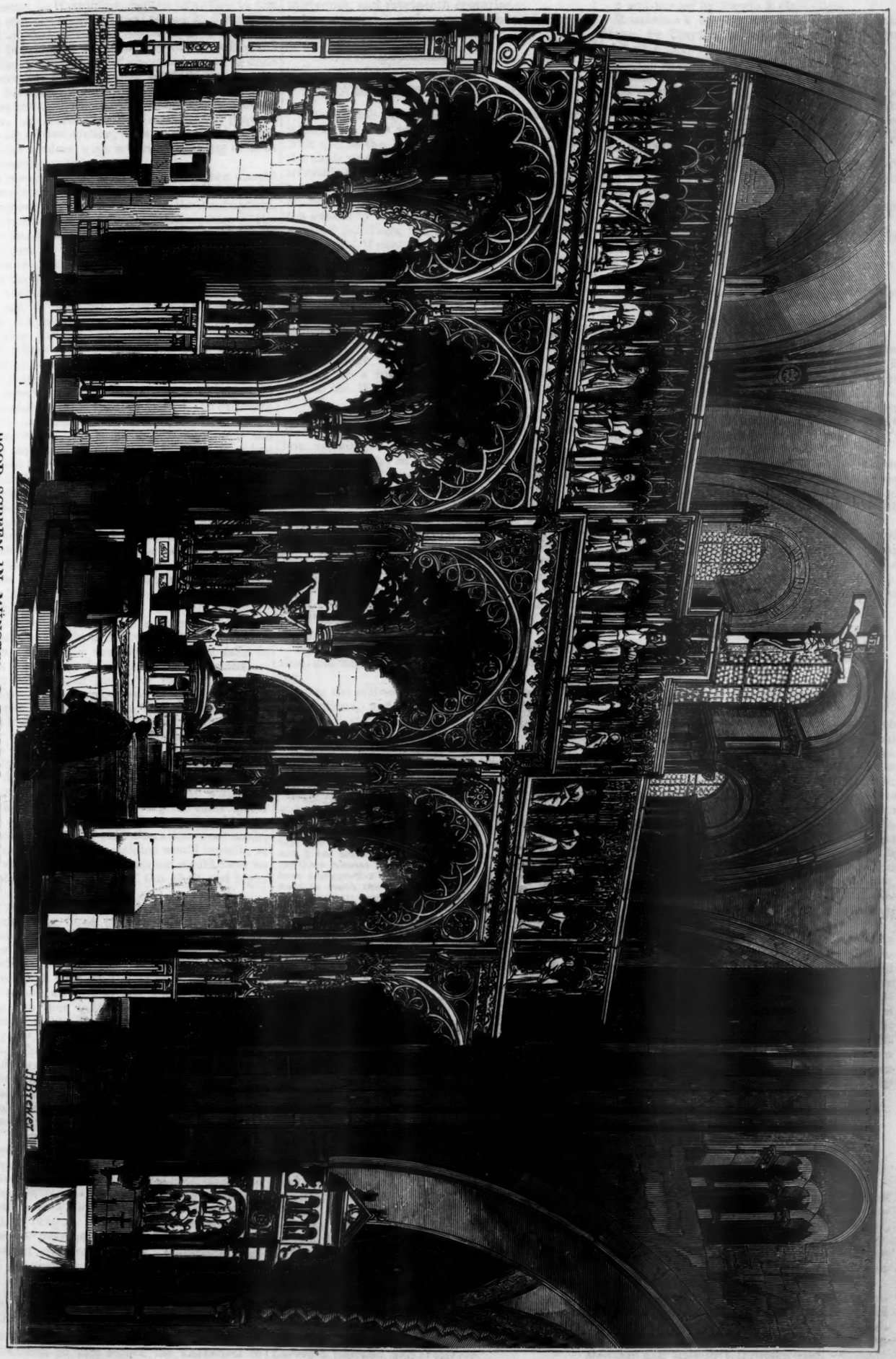
The volume of air necessary to be passed through rooms, in order to thoroughly ventilate them, should not be less than 15 cubic feet per minute for each occupant. In ordinary dwelling-houses it would suffice to pass 45 cubic feet per minute through the rooms in the basement, 60 cubic feet through the dining and drawing-rooms, and 30 cubic feet through each bed-room. The air should move through the rooms to the discharging orifices in or near the ceilings with a velocity of 2½ feet per second, or 150 feet per minute. At this speed the movement would be gentle and almost imperceptible; and the rooms would be found after occupation for any length of time as agreeable and salubrious as if they had not been occupied at all. The free areas of the orifices of supply to, and discharge from, the rooms, to produce these results, would be in the basement rooms $\frac{15}{45} = \frac{1}{3}$ of a square foot; in the dining and drawing-rooms $\frac{15}{60} = \frac{1}{4}$ of a square foot; and in the bed-rooms $\frac{15}{30} = \frac{1}{2}$ of a square foot. It should be understood that complete interchange of air in rooms, to the above extent, cannot be produced by *natural ventilation*; that is, by the small difference subsisting between the temperature of the air inside and outside of the house when no fires or lights are burning in the rooms. It can only be obtained by some *artificial power*, either for forcing fresh air in or drawing the vitiated air out; and no better, cheaper, and safer method can be adopted than that of hot-water pipes placed in air tubes carried up in the partition walls of buildings, as previously described. The vitiated air upon entering the columns of tubing is immediately warmed and expanded; and, in consequence, it acquires an ascensional power which is proportional to the height of the tubing and the difference of temperature between the air inside and the atmosphere outside. The areas of the tubes for discharging the air could be calculated from these differences of temperature.

This system of warming and ventilating buildings is eminently practicable, and is adapted to every class of house, from the smallest to the largest. It is free from complication, easily put together, safe and certain in action, very economical, and not liable to get out of order when properly arranged and constructed. As the hot-water pipes and the air-tubes would be contained within the thickness of the partitions, they would not be seen, and would occupy no space in the rooms. By this system, while fresh warm or cold air would be flowing into the rooms near the floors, vitiated air would be flowing out at the ceilings, and thus a constant interchange of air would be going on in the rooms, rendering them comfortable and salubrious.

JOHN PHILLIPS.

REFERENCES.

A A and B B. Vitiated-air columns.
C C and D D. Warm-air columns.
E. Vitiated-air outlets from rooms.
F. Warm-air inlets to rooms.
G. Fresh-air inlets to columns C C and D D.
a. Boiler at back of kitchen-range.
b c d e. Hot-water ascending pipe.
f. Hot-water cistern.
u. Cold-water cistern.
g h i k l m. Hot-water descending pipe.
d n l and *h o k*. " "
p q r s. Stop-cocks for turning off circulation in pipes *d n l* and *h o k*.
t. Escape-pipe for air and steam.



ROOD SCREEN IN MÜNSTER CATHEDRAL, WESTPHALIA.

ROOD-SCREEN AT MÜNSTER.

A short time ago we published a letter from Münster, in Westphalia, calling attention to the fact that the elaborate rood-screen in the cathedral of that town was doomed to destruction, and begging us to bring the matter before the public in order to see if anything could be done to save it. From inquiries we have since made, and information recently received, we fear that the removal of this ancient monument is decided upon. As it seems useless to attempt to prevent this act of destruction, all we can do is to present our readers with a careful drawing of it in its present condition.

It is sad to think that this rood-screen should have escaped the Iconoclastic spirit of the sixteenth century, the mad rage of the Anabaptists, the scarcely less destructive Italianization of the seventeenth and eighteenth centuries, only to be destroyed in our own day, when works of Mediæval art are prized and cared for. And what makes the matter more astonishing is the fact that the very people who have conceived this act of barbarity have shown themselves most enthusiastic church restorers. Witness the very judicious restoration of the cathedral itself, where the whitewash has been carefully removed from the walls, bringing to light many most interesting remains of ancient painting; the removal of the hideous and incongruous organ-gallery, the opening out of the exquisite arcades surrounding the western choir, and the destruction of the walls which built out the lower stories of the western towers. Nor has this zeal for the good cause confined itself to the cathedral alone; for the restoration of the Church of St. Moritz is one of the most costly and beautiful that has been yet attempted in Germany. The churches of St. Martin, St. Ludgeri, and St. Mary have also been restored, furnished, and decorated, in a satisfactory manner; and even the hideous seventeenth-century church of St. Giles has been beautified (as much as such a building could be), by the superb frescoes of Steinlie. The new Capucine church and convent form a most picturesque and spirited little group of Gothic buildings; and, although the new Jesuit Church fails in detail, it is solemn in effect and well planned.

The only reason given for the proposed destruction of this rood-screen is the fact that it shuts out the view of the high-altar from the nave; and it seems to us that this might be very easily remedied by pulling down the solid wall which forms the back of the screen, and substituting in its place open arches (which has been done at Louvain, where there is a very similar screen), or piercing the wall with open traceried panels, and removing the three altars which occupy the centre and side compartments. We feel sure that, if this alteration were made, no great cause for complaint would remain, as what would be left of the screen would form no real obstacle to a view of the choir and high-altar.

We will now give a short description of this rood-screen as it at present exists. It is (as will be seen from our engraving) a rich specimen of the latest German Gothic, and was erected in the year 1490. It consists of a solid wall pierced with two doorways, in front of which stands an open arcade of five semicircular arches with open buttresses between them, and a series of richly canopied niches above them, twenty-one in number, and each containing a statue. The centre one represents "Our Lord in Judgment," and the twelve nearest the Apostles, from which this screen is called "Apostelgang." The vaulting which connects the wall with the open arcade is very irregular in construction: it is, in fact, a "skeleton vault," consisting of ribs only. Each rib is connected with the wall, from which it springs, by open tracery, so as to form a kind of bracket, and these brackets support a flat roof, composed of slabs of stone: a roof of the same construction exists over the baldachino in the Theyne Church at Prague. On the top of the screen is a gallery or passage about 8 ft. wide, which is approached by two "newel" staircases, contained in circular turrets, which are pierced with flamboyant tracery. These staircases are at the back of the solid wall of the screen, and are entered from the choir. This screen stands under the western arch of the "crux," so that the intersection-space is included in the choir.

In addition to this screen the Cathedral of Münster contains many other ancient articles of church furniture; for instance, a fine set of double stalls, early sixteenth-century work, two noble stone tabernacles of the same date, a very ancient clock, a bronze font, a credence-table, and a number of reliquaries of the twelfth, thirteenth, and fourteenth centuries.

Our engraving is from a sketch made for us on the spot by Mr. Brewer.

THE ARCHITECTURAL ASSOCIATION.

The annual *conversazione* of the Architectural Association was held on Friday evening, the 30th ult., at the Rooms, in Conduit-street, when the chair was taken by Mr. W. White, who distributed the various prizes. The first on the list was for the best essay on the Effect of Literature on Architecture, awarded to Mr. L. F. Day; and the second to a gentleman who answered to his motto, "Buildings, not Books," and received his prize. Mr. Walter Evill gained first prize for the best series of sketches in the class of Design, the second being awarded to Mr. W. L. Spiers. The prize for the best summary of subjects in the class of Construction and Practice, was adjudged to Mr. Bell, and for the best figure drawings to Mr. Lewis. Mr. W. Henman gained a prize for the best measured drawings of existing buildings in England; and two prizes for designs for a town church were awarded—the first to Mr. W. L. Spiers and the second to Mr. A. Hill.

A testimonial was then presented to Mr. D. Mathews, in acknowledgment of his services as hon. secretary.

The Chairman, in his address, dwelt at some length upon the necessity for a liberal education as a sound basis for the reception of art training, and went on to say that the converse of this proposition had begun to be also recognised, namely, the importance of art training as a portion of a liberal education. The late Sir Frederick Slade had left 45,000*l.* for the purpose of promoting this object, and a plan was likely to be now adopted by University College, which was to receive a large share of the means, for carrying out a comprehensive course of art study.

The address was much too long for the occasion, and had the effect of dissipating the meeting.

After the address, Professor Kerr made a few observations, and some music concluded the evening.

THE ARCHITECTURAL ASSOCIATION CONVERSAZIONE.

Sir,—There is one feature of this *conversazione* which I wish to bring prominently before the members; and that is, that Mr. Carne's drawings for the Royal Academy studentship were upon the walls. There were other members who went in for the studentship with Mr. Carne,—and I was among the number,—but our drawings were not there because we did not think of sending them. I have a suggestion to make to the committee, which I want to reach the eyes of all members, and that is, that a certain portion of the walls of the gallery be allotted for the hanging of Royal Academy probationship and studentship drawings *by members*; and that a large bill be fixed over these drawings to announce the fact that they are *members'* probationship and studentship drawings. This would show a little of what members do *out of* the Association; and I trust that all members will aid in the carrying out of this scheme.

A Member.

THE ARCHITECTURAL MUSEUM.

The following gifts of materials and decorative work have been received or promised. The donors well deserve the publicity we can give them. The Caen stone for the interior of the building by M. Foucard. A figure of St. George, carved in Sicilian marble, by Sig. Fabbricotti, from a design given by Mr. Redfern.

Terra-cotta busts for the front of the building by Mr. Blashfield; subjects being William of Wykeham and Sir C. Wren.

Red granite shafts for windows by McDonald Field, & Co., and Fraser & Son, of Aberdeen.

Patent steel shutters by Clark & Co. (a similar offer from Bunnett & Co. came too late).

Tiles for the front by Godwin, of Lugwardine, from a design by Lord Alwyne Compton, and for the floor by Minton, Maw, Godwin, Oppenheimer, Rust, and Malkin. Patent painted tiles, representing two processions, for front of building, by Harland & Fisher.

Stained glass for windows by Clayton & Bell, Lavers & Barraud, and O'Connor.

Iron-work for screen by Hardman, Peard & Jackson, Brown & Downing, Hart & Son, and Richardson, Slade, & Ellson.

Window casements by Burt & Potts.

A large patent stove by the London Warming and Ventilating Company.

A sun-burner by Strode & Co.

Mosaic-work by the Salviati Company, from design by Clayton & Bell; also mosaics given by Rust & Co.

Marble mosaic by Harland & Fisher.

Coloured decoration by Mr. Charles Hudson.

Carvings by Messrs. Poole & Son, being the seal of the A. M. and the heads of the architects of the Parthenon, and of St. Sophia and of William of Sens; and by Messrs. Rattee & Kell and Mr. Whitehead.

Two large figures, representing Architecture and Sculpture, by Mr. Earp and Messrs. Farmer & Brindley.

Furniture by Cox & Son and Mr. Chapman (an art-workman).

Tracery over door and door-frame in oak by Rogers & Booth, of Gosport.

Six iron principals for roof by Kelk & Lucas.

Iron balcony for lectures, by Skidmore.

Lamps for entrance, and patent springs for screen, by Hart & Son.

Washing convenience by Jennings.

Stain and varnish by Mr. Swinburn.

The Council expect to move the collection from South Kensington in January, 1869, when it will be at once enriched by fine specimens taken from various cathedrals by Mr. Octavius Hudson, some from Westminster Abbey and other places by Mr. Scott and Messrs. Poole & Son, and a complete set of figures from Henry VII.'s chapel, presented by Mr. Brucciani.

The present income from annual subscriptions will be utterly inadequate for the maintenance of the Museum in its independent existence, and ought to be at once increased by 200*l.* or 300*l.* a year.

A committee for considering the best means of ensuring practical teaching by the collection has been formed, and with such a collection the Council look to the architectural world for substantial support in carrying out their various aims.

AGRICULTURAL LABOURERS' COTTAGES.

There have been recently erected at Down Hall, in Essex, by Mr. Selwin Ibbetson, M.P., several cottages for agricultural labourers, each cottage containing a living-room, scullery, and three bed-rooms, with an equipment of offices and fittings, including hard and soft water supply. Some of the cottages have all their sleeping-rooms on the chamber-floor, while others are arranged with one of the bed-rooms on the ground-floor. The cottages have been built with Cambridge perforated bricks, relieved with bands of Staffordshire red and black bricks. The roofs are covered with Huntingdonshire tiles of an ornamental character, having projecting eaves, gables, and porches. The works have been carried out by Messrs. Bell & Son, of Cambridge and Saffron Walden.

Similar cottages have also been erected on the estates of Mr. R. P. Long, M.P., near Chippenham, in Wiltshire, built of dark-red bricks and covered with Bridgwater tiles. The works have been carried out by Mr. George Bezant, of Chippenham. Similar cottages have likewise been erected near Wallingford, Berks, for Mr. N. Humfrey, and in Cheshire for Mr. W. Wright. The several works have been carried out from the designs and under the directions of Mr. John Birch, whose plans have also been adopted by the Duke of Rutland.

HUDDERSFIELD CONVALESCENT HOME.

Mr. Charles Brook, jun., J.P., a member of the firm of Brook Brothers, thread manufacturers, of Meltham Mills, near Huddersfield, having given the munificent sum of 30,000*l.*, to form a convalescent home at Huddersfield, the foundation-stone of this edifice has just been laid, with Masonic honours.

The Home is to stand on the summit of Mealhill. The site is a portion of fifteen acres, and the prospect it commands is charming. Mealhill is approached by a road branching from the Meltham and Holmfirth turnpike road.

The style of architecture adopted for this hospital is of the domestic Gothic character, with a few modern developments. The main

ront will face north-east, and be about 190 ft. ong. The centre part of this will project a ittle, and be devoted to the administrative department, and will contain, on the ground floor, a central entrance, with matron's parlour, surgeons' consulting-room, and patients' waiting-room. The wards branch out right and left, for each sex, and consist, on the ground floor, of capacious staircases and corridors, which, being on the south side of the building, will be agreeable for the invalids in bad weather, leading to the convalescent day-rooms and night-wards for the infirm. The patients' entrances from the recreation-grounds will be to the main staircases, under covered glass porticoes. Extending further south-west is a dining-hall, with the kitchens, pantries, and store-rooms beyond. On the first floor, the central part contains the matron's and nurses' bed-rooms, and store-rooms for bedding and linen. There are two night-wards for each sex, which are divided by low partitions, 8 ft. high, for privacy, each apartment accommodating two beds. There are lavatories and bath-rooms, furnished with hot and cold water. There will be accommodation for thirty males and thirty females, and the hospital will be so arranged as to be capable of enlargement. The apartments for the domestics will be over the kitchens. The buildings are to be constructed of Yorkshire stone, from designs prepared by Mr. Edward Birchall, architect, Leeds, and will be carried out under the superintendence of Messrs. Kirk & Sons, architects, Huddersfield.

BRADFORD HOUSE OF RECOVERY COMPETITION.

THE designs for this building have been on view. The instructions issued to the architects were that the general arrangement of the hospital should be on the pavilion system.

Messrs. Lockwood & Mawson present two designs, the one Gothic and the other Italian. Their designs illustrate the pavilion principle, developed in two modes of arrangement, both with the pavilions on lines from north to south, and therefore with east and west aspects to the wards. The buildings are two stories in height. Each ward, to contain twelve beds, would be 60 ft. long, 25 ft. wide, and 16 ft. high, with 24,000 ft. cubical contents, allowing 2,000 ft. to each patient, and also a private ward, containing nearly 3,000 cubic feet. The architects state their "opinion that 100*l.* per bed is sufficient for the cost of the sixty patients provided for in the design, or the sum of 6,000*l.*" for the structure, and the separate building, for twenty patients, they estimate at 50*l.* each, making an extra sum of 1,000*l.*

Mr. E. Birchall's design is Gothic, two stories in height, with the administrative department in the centre, and the wards at either side, connected with the central building by corridors. He gives accommodation for fifty-two patients, the wards on either side in each story for twelve patients, who have each rather more than 2,000 cubic ft. of air, and a small ward is shown, capable of accommodating one patient. The wards run nearly north and south. Mr. Birchall considers that it could and ought to be built at a cost of 100*l.* per bed, but thinks that the sum might advantageously be raised to 150*l.* per bed.

The selected design, by Messrs. Andrews, Son, & Pepper, is treated in a different manner from the others. Their first design shows a two-story building, but in their second the wards are only one story. In the centre of the front pile of two stories, which partakes somewhat of the Gothic style, is the administrative department, where apartments for the board-room, the waiting-room, the surgeon, the matron, and other officials are located. The front faces to the north. The convalescent wards are placed right and left of the centre. The acute, or fever hospital wards, four in number—two for males and two for females—are in the rear, and on the south side of the administration, each ward having a south, east, or west aspect, and shut out from the north. The wards are each 60 ft. long, 25 ft. wide, and 16 ft. in height, lighted by five windows on either side, the space between each ward being three times their height, and they will each accommodate twelve patients. The wards will be warmed by Pierce's stoves, Sheringham's ventilators and other means being used to secure a proper supply of fresh air, and the top of each window fitted with fixed open louvres of glass. The wards are attached by closed corridors of wood and glass, roofed with slate, and another corridor leads from the administration. Each patient will have more than 1,000 cubic feet of air space, the walls of the ward will be covered with cement, and the floors be of oak, the roof and window-frames of iron. Sixteen patients can be accommodated in the convalescent and fifty-two in the acute wards, and the cost of the building will be about 110*l.* a bed, or 8,000*l.*

NORWICH LUNATIC ASYLUM COMPETITION.

SOME months ago the corporation of Norwich invited Mr. Brown, of that city, and Mr. R. M. Phipson, to submit designs for the proposed New Lunatic Asylum, and those gentlemen accordingly did so. After some discussion, the council referred the plans to Dr. Robertson, of the Sussex, and Dr. Campbell, of the Essex Lunatic Asylum, in the state in which they were received by the committee, and each of these gentlemen was asked to give his independent opinion as to which set of plans would be the best calculated to meet the views which the council had in erecting the Borough Asylum of this city. Both these gentlemen reported strongly in favour of Mr. Phipson's plans, and at a meeting held on the 31st ult., the town-council adopted them.

The reasons given by Dr. Robertson as those on which he grounds his preference are suggestive, and may be useful to other designers:—

"1st. Mr. Phipson's plan in its general features and design is original in conception, and an advance on the present standard of asylum architecture in the direction in which the medical superintendents of asylums have long pointed, viz.—

A. The means of classification and distribution of the patients is complete.
B. The day rooms are all on the ground floor; it greatly facilitates the working of the house.
C. There are no complicated dark corridors to intercept ventilation.
D. The access to the wards from the centre block is simple and ready.
E. The thorough ventilation of the wards by natural means is insured.
F. The arrangements for the wards, offices, w.-c.s, &c. are of the best construction.

2nd. The general distribution of the buildings specially commends itself to my approval, and stands in marked contrast to the ill-designed crowding of the different buildings in Mr. Brown's plans.

The division into administration block, wards, dining-hall, laundry, workshops (with accommodation at the two latter for working-patients) is very complete, and a clever application of the pavilion system to the works of an asylum.

3. Above all, these arrangements of Mr. Phipson's commend themselves by the great facility which they offer for convenient and economical extension of the building, should such want arise (as in all asylums it has done)."

HERTFORD LABOURERS' COTTAGE COMPETITION.

SIR,—In reply to your correspondent "Competitor" on this subject, I had my drawings returned safely (two sets), with letter, stating that the premium was awarded on the day of the Agricultural Show to Mr. W. H. Scriven, of Leamington. COMPETITOR 80 and 81.

CONCRETE HOUSES.

SIR,—Referring to a letter by "Artifex" in your journal, page 788, relative to the fall of a concrete house at Twickenham, I beg to forward you plans of the building, so that you may form your own opinion; and I challenge "Artifex" to erect a house with 14-inch walls in ordinary brickwork built at the same rate per day that this concrete house was, without the same result, i.e., the penalty of falling down by the time his walls are 38 ft. high. First, "Artifex" informs you he found on inquiry the work had been superintended by me. This statement is entirely false: I saw the building once only before I was informed that part of the front wall had fallen. At the time I saw the building the walls were 9 ft. high only, and ready for the joists. The first defect in construction I complained of was the large recesses at each quoin of the building as shown on plans, and informed the clerk of works it was an absurdity to nearly sever the walls in such a manner, especially where the strength was so very essential. I was informed the space was left for a 5-inch water-pipe. I requested him, before proceeding further, to obtain the pipes and put them in with neat Portland cement without delay, but, instead of doing so, the building was carried up 38 ft. without joists or any tie whatever; and, to make matters still worse, all the quoins were chamfered off to one-third the thickness of the wall for an ornamental water-spout. I beg to call your attention to the back front, 40 ft. by 38 ft. high, with its large openings, and without any cross wall, joist, or tie of any description. Further, I must ask you to notice the long party wall, and ask if it is practical building to construct this main stay recessed in the manner as shown for cupboards, &c., leaving only 4½ in. of concrete work at the back.

The clerk of the works informed me that the part in front which first gave way stood on the most treacherous foundation, indeed it was a complete quicksand. I must also mention, that although the gravel was some of the finest I ever saw, being clean and sharp, the proportion of sand was far too great. Had I superintended the construction I should have passed the gravel through a ½ screen: see my pamphlet.

Last, but not least, the quality of the cement was of the very worst description. There are a number of good cement manufacturers who supply cement of a quality to be depended upon. If builders will go to dealers (who must have profits), and not to manufacturers, what result can they expect? I should certainly recommend intending builders in concrete for the future to buy of the makers, and I shall at all times be ready to give them names of those I can confidently recommend; also to give advice as to the mixing of gravel concrete, which requires different treatment to burnt ballast or other material.

I attribute this failure to the defects in the construction, each sufficient of itself to cause such an unfortunate result to the proprietor.

And now, sir, in fairness and justice to myself, permit me (if I am not trespassing too much on your valuable space) to say "Artifex" is either prejudiced against Portland cement concrete or is ignorant of its adhesive strength, or he would have been more candid in his communication to you, and mentioned that the walls were carried up 38 ft. without joists or ties of any description, and the four large chases for rain-water pipes could not possibly have escaped his notice. He then states, "I noticed that the work had broken in straight courses evidently at the level at which the machine had been shifted, showing imperfect adhesion at this point. This is, undoubtedly, a grave defect, caused by the wall being formed in layers or courses of 18 in. in height, and one layer setting before the next was added."

If at any time the work has been standing still for a month, all that is required is to well moisten the top of the wall or mix the first 3 in. or 4 in. of concrete with more water, or a little thin grout; but this operation is not at all necessary where the work is green,—as it must be, if carried on every day. Again, concrete is always left rough at the top of the mould, and (not like smooth brick) giving a sufficient key for the next layer.

To prove the adhesive qualities of Portland cement concrete, I can show at my factory (built between two party walls of 12 ft. span) a beam, 2 ft. 3 in. deep and 6 in. thick, packed full of rough Kentish rag, large chippings from flint burs, Yorkshire stone, and brick-bats, which can be seen on the face, which beam will carry 12 tons (if the walls which form the abutments do not give way).

Lastly, I will forfeit to "Artifex" 50*l.* if I do not break an opening in any ordinary brickwork (not blue lias lime) in any warehouse in New-street, Southwark, in one-fourth the time "Artifex" can in the concrete warehouse now building in Great Guildford-street, Southwark, he being liable to me for the same amount if I am successful. J. TALL.

THE following letter, which we received last week from the owner of the house, puts a different face on part of the transaction as between himself and the patentee:—

"SIR,—Considerable notice having been lately taken in your columns of the accident to my house, I send you its history.

A few months ago, I was induced (from a perusal of Tall's pamphlet on his new patent machine, &c.) to erect a four-storied house in concrete. I therefore purchased the machine, at a cost of nearly 130*l.*; engaged as 'clerk of works' a man from Tall's office, and solely on his strong recommendation (a man, it was said, used to the method and material); and in all details followed the instructions given in the pamphlet.

As to materials, I used Thames gravel and Little's cement, both of which received continuous praise; and the walls, when at the third story, were visited by the patentee, and pronounced to be 'very good.' Notwithstanding, one wall suddenly collapsed, and the remainder

proved so unsound that the whole had to be pulled down. The ruins throughout showed no 'blocks' of concrete, but simply were as *rubble* out of a gravel-pit. In addition, the patentee, who covenants in his pamphlet, and on his bill of sale, to take back the machine (when a house is built) at half-price, takes advantage of the accident, and leaves it on my hands.

I tell the tale that others may profit thereby, and be doubly cautious—as the invention is still in its infancy—in their choice of machines, agents, and materials.

Twickenham. GEO. LARDEN, D.C.L.

We cannot meddle with any personal differences, but we have no hesitation in saying that the unlucky accident at Twickenham tends in no way to disprove the belief that concrete, properly compounded and properly applied, will make sound, strong, and enduring walls. Our knowledge of concrete, and faith in it, date from many years ago, and we are perfectly assured that in many situations it may be most economically and satisfactorily employed.

The warehouse in Great Guildford-street, Southwark, is 70 ft. one way, 50 ft. the other, and is to be 60 ft. in height. The concrete there is compounded of crushed slag, gravel, burnt clay, and Portland cement, in the proportion of one of cement to six of the other mixture. We saw a piece cut out of the lower story, and found it as hard and as solid as stone. Where it is intended to make the walls lofty the work ought not to be hurried.

THE NUMBERING OF HOUSES.

SIR,—In reference to this subject mentioned in your last issue, will you allow me to suggest to a few enterprising fellows how they might promote the convenience of the public, and at the same time benefit themselves? Miles of houses in London and its suburbs are fitted with fanlights over the door which are illuminated by the hall gas at night. Let a man call with the requisite materials—say moveable figures, with cement for fixing them—at every house, and I believe a very large proportion of occupants would be only too glad to have the work done at once. The cost could not be great.

NUMBER FOUR.

POPLAR AND STEPNEY SICK ASYLUM.

SIR,—In your list of the estimates submitted by the architects competing for this work, you quote only one of my estimates, and that the highest.

I submitted two estimates, the lower sum being 47,000*l.* There are thus but two architects whose estimates are lower than mine. The sums named by these gentlemen are about 12,000*l.* below me, and 15,000*l.* below any of the other competitors.

Such extreme variation in the estimated cost of designs, which provide, of necessity, much the same cubical content, shows how essential it is to a just decision that *all the competing designs* should be submitted for valuation to the same surveyor.

You consider my elevation ugly. You have a right to your own opinion. It is, however, fair to mention that the first of the instructions to competitors directed that the building should have "no architectural pretensions whatever." I have endeavoured to carry out this instruction.

G. GILBERT SCOTT, Jun.

FALL OF HOUSES, HOLLOWAY.

SIR,—Seeing in your paper of the 24th ult. a notice of the fall of three houses in the Holloway-road, Upper Holloway, and being interested in similar buildings adjoining, I must ask you to give the names of the builders of the said houses, viz., Messrs. W. & R. Carter, as it is very detrimental to the letting or selling of property adjoining to leave this in doubt.

A LOVER OF FAIR PLAY.

METROPOLITAN BOARD OF WORKS.

Finsbury Park.—A deputation appointed at a public meeting in Finsbury attended the Board at its last meeting to present a memorial in reference to the proposed buildings to be erected in Finsbury Park. The deputation was a numerous one, and was introduced by Messrs. Savage and Elt.

The memorial stated that the memorialists had heard with great surprise and regret that the Board had resolved to purchase 131 acres of land only for the purposes of Finsbury Park, instead of 250 acres, as authorised by the Act of 1857, and that 20 acres were to be appropriated to building purposes.

The Chairman said that there was a clause in the Bill enabling the Board to reduce the area sought to be obtained, and they adopted that course rather than abandon the Bill; but the circumstances were altogether changed, as the park had to be formed entirely at the expense of the ratepayers.

After some discussion, and several motions, the Board finally resolved, by a majority of 15 to 12,

"That no reason whatever had been shown that the usual course should be departed from, and that the memorial be referred to the Works and General Purposes Committee for consideration and report."

Illegal Practices by Scavengers.—A report was brought up from the Works and General Purposes Committee, recommending

"That the Board do offer a reward of 2*l.* 2*s.* to any party or parties giving such evidence as shall lead to the conviction of scavengers and others detected in sweeping refuse into the gullies, shafts, and other works connected with sewers, and that the several vestries and district Boards be requested to co-operate with the Board by prosecuting the parties charged with reference to their sewers."

Mr. Thompson said that this practice in the parish of Clerkenwell, which he represented, cost them thousands of pounds, and he trusted that a clause would be inserted in some Bill they might promote in the coming session of Parliament empowering them to prosecute the employers of these men.

The recommendation was put and agreed to.

THE TRADES MOVEMENT.

A CIRCULAR has been sent by the secretary of the General Builders' Association to all their local branches, inclosing this form of address to be sent to operatives:—

"Name of town.....
Date .....
To the operative..... of .....

We, the master builders employing operative in do hereby give you notice that we require the following alterations in the trade rules now in force in this district:—

I. The rules relating to the reckoning of time *and quarter time*, and the payment of wages, are to be abrogated and rescinded, and in lieu thereof the following is to be the rule:—

Rates of Wages.

That the following shall be the ordinary rates of wages for skilled operatives. Superior and inferior workmen to be rated by special agreement.

The men who have hitherto been paid per week, shall be paid per hour.

II. Any rule or custom forbidding or interfering with the employment or use of machinery or machine-worked materials is to be abrogated and entirely done away with.

III. Any rule or custom forbidding or interfering with the introduction or use of stone worked at the quarry, or anywhere else than the place where it is to be used, is to be abolished and done away with.

IV. That all trade rules, disputes, demands, and differences shall be settled for the future by conciliation or arbitration, and proper courts shall be constituted for the purpose.

And we hereby further give you notice that we are prepared at any time, upon six days' notice from you, to meet you, and publicly severally appoint our arbitrators, and mutually select the umpire; and we are willing to leave to the decision of the arbitration court thus appointed not only all future settlement of trade rules and disputes, demands and differences, but also the settlement of all matters contained in this notice *and in the notice received from you.*

And we hereby further give you notice that we require the alterations contained in this notice to come into force on the 1st of May, 1869, or on such other day as is mentioned in the existing rules as the day upon which new or altered rules shall come into force.

Signed, on behalf of the master builders."

PUBLIC BUILDINGS AND THE BUILDING ACT.

ROYAL ALFRED THEATRE.

ON the 27th of August last, a summons was heard at the Marylebone Police-court, and which was reported in our columns, in which Mr. Peebles, district surveyor of North Marylebone, charged Mr. Simpson, builder of the Royal Alfred Theatre, with constructing the floors of the corridors leading to the boxes upon the first gallery, and also the floor at the back of the said gallery, with combustible materials, contrary to the Metropolitan Building Act; and with omitting to construct the said floor with stone or other fireproof material, and carried by supports of a fireproof material, as required by the said Act. After a lengthened investigation, Mr. D'Eyncourt ordered that the works considered necessary by the district surveyor should be carried out by Mr. Simpson, and the necessary order was signed.

On the 27th ult., the district surveyor attended before the magistrate, to press for penalties against Mr. Simpson, for refusing to obey the magistrate's order. Having been sworn, Mr. Peebles said that defendant told him he had obtained counsel's opinion that Mr. D'Eyncourt's decision was wrong, and he should proceed with the building without carrying out the order. His (the surveyor's) clerk wrote to the defendant, asking that plans should be sent, as required by the 38th section of the Building Act, and also suggesting an appointment; but defendant took no notice of it. He was not even in court that day. The theatre was now open, with the regulations imposed by law were set at defiance.

A legal gentleman applied for a fortnight's delay on behalf of defendant, and promised that the order would be carried out by his client.

Mr. D'Eyncourt reluctantly consented, but said if the Act of Parliament was not *bond fide* complied with by defendant without delay, the whole fines imposed for each day's non-compliance would be resolutely enforced.

SURVEYOR FOR METROPOLITAN POLICE.

MR. T. C. SORBY, on account of the increase of other duties, has resigned his appointment as Surveyor to the Metropolitan Police and Police Courts; and Mr. Caiger, the Deputy Surveyor, has been appointed by the Secretary of State to the vacancy.

The principal buildings erected, and erecting from the designs of Mr. Sorby, are the Lambeth Police Court, Police Stations at King's-cross-road, Vine-street, Wapping (High-street), Blackman-street, Hammersmith, Rochester-row, Lea-bridge, Bedfont, Richmond, and Ealing.

WASHABLE INDIAN INK.

ARCHITECTS and draughtsmen generally know the difficulty—in fact, impossibility—of obtaining Indian ink that will not run when coloured over. Mr. Stanley, of Great Turnstile, Holborn, has produced an ink which he describes as being simply a solution of redissolved Chinese ink, to which is added a chemical mucilage that renders the ink insoluble after it has dried upon the paper. We have practically tried this with the most severe test—namely, on tracing cloth. When the usual Indian ink is used on this material draughtsmen know the result, if any attempt be made to colour over it: consequently the colour has to be applied to the back of the drawing. The new ink will neither wash up nor blurr. We have tested it also on parchment, with the same satisfactory result.

As to the ultimate action or effect of the chemical mucilage employed, we know nothing; but the truth of the statement made by Mr. Stanley—that it will not wash up or blurr, we can from practice safely substantiate; and we make this clear expression of our opinion because we believe the ink will be a boon to the architectural and mechanical draughtsman. In other words, this really is an invention that "will wash."

CHURCH-BUILDING NEWS.

Windhill (*Bradford*).—The memorial stone of Christ Church, Windhill, the erection of which was begun last spring, and which is now rapidly approaching completion, has been laid by the Bishop of Ripon. There has long been an increasing demand for church accommodation in Windhill. Mr. F. S. Powell, M.P., Mr. M. W. Thompson, M.P., and Mr. Benjamin Wood have contributed 250*l.* each; Mr. W. R. C. Stansfeld, Mr. Edward Salt, Mr. G. Hargreaves, and Mr. Joseph Wood, 100*l.* each. A grant of 500*l.* has been made by the Ripon Diocesan Church Building Society, and of 120*l.* by the Incorporated Church Building Society. The total amount of the contributions from all sources was 3,200*l.*; and the cost of the new church, including the site, will be about 4,200*l.* The sum of 4,200*l.* does not include the cost of the spire (700*l.*), which will be erected when the funds permit. The site is on the south side of the turnpike-road leading to Idle. The body of the church is 75 ft. long and 56 ft. wide, and is divided into a nave and side aisles by circular stone shafts, having carved capitals supporting pointed arches in stone. Above, four circular windows on either side in each clearstory admit light into the nave; and the aisles have painted windows arranged in couples. The chancel, 35 ft. long by 23 ft. wide, opens from the nave by an arch the full width of the chancel. At the east end of the north aisle provision has been made for a tower, in the lower part of which the vestry is placed, separated from the chancel by an arcaded screen. Above is the organ-chamber, and a corresponding extension of the south aisle contains seats for the school children, with a chamber underneath for the reception of the heating apparatus, by Hayden, of Trowbridge. The end of the chancel is semi-circular, and will be lighted by seven long lancet windows. The roofs of the nave and aisle will be formed of framed timbers, supported upon stone corbels, and the spars will be visible. The roof of the chancel will be divided by moulded ribs and panels, plastered and prepared for colour. The seats will be open, and all the internal wood-work stained and varnished. Messrs. Andrews, Son, & Pepper, of Bradford, are the architects.

North Otterington.—The new parish church for North Otterington has been consecrated by

the Archbishop of York. The old parish church is situated at the extremity of the parish, nearly three miles distant from the bulk of the population, who reside in the township of Thornton-le-Moor. In consequence of that it was decided to build a new church in that village. Here was an old parochial chapel, supposed to have been built in the thirteenth century, but in the year 1811 divine service ceased to be performed in it, and the building, lost to the church, was used as a school-room and cottages for poor families, the chamber-flooring of the cottages being formed of the old pews. The eastern part of the building was the school-room, and remained in charge of the schoolmaster till 1837. Shortly after this the dissenters, having got possession, used it as a place of worship. The late vicar (the Rev. F. Starky), supported by Sir Samuel Crompton, endeavoured to recover the building, but failed. Upon the appointment of the present vicar (the Rev. F. Seale) legal measures were taken for the recovery of the building, and this was accomplished. The old chapel was pulled down, and the new parish church (the foundation-stone of which was laid by Lord Greenock last autumn) was erected on the site. The designs for the building were supplied by Messrs. Atkinson, architects, York. It consists of a nave, chancel, and vestry at the north-east, porch at the south-west end, and bell-turret at the west end. The style is Early English. The east window is a reproduction of the east window in the old chapel. The outer walls of the church are rough Bradford sets, with Osmotherly stone facings; the inner walls are lined with pressed red bricks, varied with courses of black brick. The church is fitted with stalls of stained deal; the nave with open benches; the floors and reredos are laid with encaustic tiles. The cost of the building has been 1,150*l.*, exclusive of the old material.

Tintagel (*Cornwall*).—It is proposed to restore part of Tintagel Church as a memorial of the late Mr. Douglas Cook, of the *Saturday Review*.

Campden (*Gloucestershire*).—The Gainsborough Memorial Chapel of St. Michael's, Broad Campden, has been opened by special service. The church, which has been built after the design of Mr. John Pritchard, diocesan architect of Llandaff, consists of a nave and small apsidal chancel, with a bell-turret.

Harmston (*Lincolnshire*).—All Saints' Church, Harmston, has been re-opened. The restoration, or rather the reconstruction of this church, consists in new roofs to nave, aisles, and chancel, new windows throughout the whole fabric, glazed with cathedral glass of green and gold; new open seats, the raising of the chancel floor, the erection of a screen and a pulpit of Ancaster stone and Welch marble shafts. A reredos has been placed in the chancel, with white marble cross, the stonework illuminated by Messrs. Beh & Redfarn. The work has been carried out from designs of Mr. R. J. Withers, architect.

Preston (*Suffolk*).—St. Mary's Church, the tower of which fell in 1863, has been partly rebuilt and re-opened for divine service. The church overlooks the valley of the Brett. It is of mixed architecture, principally Decorated, with Perpendicular windows, &c., inserted. There is a nave, with aisles and clearstory, west tower, north porch, and vestry. The church is built of flint and stone, with flush panelling. There are clustered piers in the nave, the shafts pear-shaped and filleted, with moulded bases and capitals. There were formerly a number of coats of arms, in stained-glass, in the east window, which were removed, and are now inserted in the clearstory window. The east window is in three lights, of geometrical tracery, and of stained glass, with Christ, as the Good Shepherd, in the centre, and the Sower and Reaper on either side. The side windows are Decorated two-light ones, with angels in the centre bearing labels. In the tracery of the side windows, and those at the east end of the aisles, are angels with extended wings, holding scrolls. The west or tower window is Perpendicular, also of stained glass, with Christ, in the attitude of blessing, in the centre, supported by Moses and Aaron, thus representing the Law, the Priesthood, and the Gospel. These windows are the work of Messrs. Ward & Hughes. The staircase to the rood-loft is blocked up,—possibly done in the first instance, like that in the church of Rickinghall Superior, by a churchwarden in the brick trade. The restorations effected have been extensive, almost amounting to a rebuilding of the church. The greater portion of the tower is entirely new, and part of the walls of the aisles; and there is a new vestry on the northern side. The roofs are also new; those of the nave and aisles nearly flat, with moulded timbers and carved bosses and cornices. The chancel-roof is wagon-shape, fourteenth-century style. All the internal stonework has been cleaned and restored, and the walls replastered. The floors are paved with Minton's tiles. The church is heated by hot-water apparatus. On the side walls are quaint paintings that doubtless were considered, when executed, very fine and appropriate. One contains the Royal arms, with many quarterings, of "Good Queen Bess," with the inscription beneath, "Elizabetha Magna, Regina Angliæ." The works were carried out by Mr. Tooley, of Bury St. Edmund's, under the superintendence of Mr. A. Blomfield, architect.

Brixton.—The new church of St. Jude, recently built in Brookwell Park, Water-lane, Brixton, and which has already been illustrated by engravings in the *Builder*, has now been consecrated by the Bishop of Mauritius, who officiated for the Bishop of Winchester. The new edifice is built of stone. It affords accommodation for the sitting of 1,000 persons, and one-third of the sittings are free. The cost of the building has been 6,000*l.*, raised by subscription in the neighbourhood. In addition to the information already given, we may here note that Mr. Plows sculptured the pulpit and reading-desk, and the font, from detailed drawings by the architect, Mr. Robins; and that Caen stone, red and green Irish marble, alabaster, and red Mansfield stone, are the materials employed in them, with polished oak door and book-boards, &c. Messrs. Maw & Co.'s tiles are used for the reredos throughout. The tablets are built up of tiles, the lettering being burnt in, so that the reredos is as permanent as the tile paving of the chancel, the walls of which the architect hopes some day to colour in devices in a similar manner to those recently completed at Christ Church, Battersea.

Books Received.

Rudimentary Treatise on the Manufacture of Bricks and Tiles, containing an Outline of the Principles of Brickmaking. By EDWARD DOBSON. Fourth Edition. London: Virtue & Co., Ivy-lane. 1868.

THIS work, originally useful, has been made more valuable, first by the revision of Mr. C. Tomlinson, F.R.S., and now by the additions of Mr. Robert Mallet, F.R.S., who has given some particulars of the greatest invention yet made in respect of the Drying and Burning of Bricks, viz., Hoffmann's kiln. It is the best handbook on the subject at present available; but a better may be made by-and-by, by bringing together the information on various heads, which in the volume as it now stands is scattered. Additional information also is needed as to moulded bricks, coloured and enamelled bricks, and the mode of cheapening them; also as to the value of covered works, and the improvements that are needed in the manufacture of bricks generally. Brick-making is not by any means in the position amongst us in which it should be. Good bricks at a much less cost than is now enforced ought to be obtainable.

We can safely recommend the little book before us as a good investment for 3s., and we advise our young readers, who are constantly writing to us for the titles of cheap books that would be useful to them, to get Messrs. Virtue's list of their "Rudimentary Series," wherein they will see the titles of many works they ought to have.

VARIORUM.

A PAPER "On Mechanical Saws," read before the Society of Engineers. By S. W. Worssam, jun. There is much practical information in this paper as to saws, files, filing machines, saw frames, &c.; and the paper is illustrated by numerous engravings. —— "The Increase of Material Prosperity and of Moral Agents, compared with the State of Crime and Pauperism." By J. H. Elliott. This is a reprint from the Journal of the Statistical Society of London, September, 1868. The paper is thoughtful and suggestive,—all the more suggestive perhaps that one cannot agree with all the author's opinions. We should not like, for example, to see people going about the streets armed for self-defence against thieves: it is easy to foresee what that would lead to: street brawls are bad enough at any time without deadly weapons to aid and provoke them into fatal results. The author treats of various important subjects, such as the poor-law, education, wages, emigration, crime, charity, &c. He is of opinion that in England there ought to be but one charity in the whole land, that is, the national poor-law. On the subject of wages, he deprecates the pretence of mental improvement as an excuse for shortening the hours of labour, as a great sham. "Advance wages," he says, "and shorten labour if you will, but do not believe that much use will be made thereof for mental improvement." As regards the expenditure of wages, some sad facts are referred to. He speaks of "men engaged in the City who have wages of from 15s. to 16s. a week, but make with fees 40s. to 45s. weekly. If they take home 15s. for the wife out of 16s., keeping one for themselves, they think they make fair contribution: they say nothing of the 24s. to 30s. extra. Men who two years ago employed six days in the week at 40s. to 50s. gave the *smallest* sum to their family on which they could drag on, and now that they get work only four or five days in the week, their families are no worse off, for they always did and do get only the minimum: the man himself has less drink."—— "County Court Reform." By G. M. Wetherfield, solicitor. London: E. Wilson, Royal Exchange. Why the County Courts are a failure, and do not pay their own expenses by more than a quarter of a million, is the chief subject to which, and to its remedies, this pamphlet relates. Its special purposes are:

"To prove that the main cause of failure is in the high rate of court fees; to show that the system of proportionate charges defeats its own object; to point out the great inconvenience of a compulsory trial in all cases; and to suggest two simple remedies by which the County Courts can be placed upon the same footing, in these respects, as other tribunals that do pay, and by this means insured in a like success. These two suggestions are:—1st. To reduce the fee on a plaint to a maximum of 5s. for 5*l.* and upwards; the same for a consent judgment, with 10s. as the highest hearing fee; though cases above 20*l.*, and those sent from the Superior Courts, might fairly be charged more, say 20s. each. 2nd. To extend the benefit of Sec. 2 of the County Courts Act to all suitors alike, and let them have judgment without hearing twelve days after personal service of the summons where no notice of defence is given; also to extend the new scale of attorney's costs provided by the above Act, to all cases between 2*l.* and 20*l.*, instead of such being limited as now to actions for goods wholly or in part sold for trading purposes."

——Messrs. De la Rue & Co. have issued their "Indelible Diary and Memorandum-Book," in numerous shapes, edited by Mr. Glaisher, F.R.S. and Mr. Thelwall, M.A. The illustration represents the wonderful Nebula in the sword-hilt of Orion, concerning which Mr. Warren De la Rue, F.R.S., contributes an interesting article. He considers that the phenomena there going on present "a picture of the formation of new worlds in space far greater than that comprised within the limits of our own solar system." We cannot avoid observing that these excellent little books would be much more legible if they were printed in black instead of blue. Indeed, considering the class to whom they are addressed, the fancy colours seem out of place.—— Part II. of vol. VIII. of the "Transactions of the Civil Engineers of Ireland," contains some valuable papers on Construction in India.—— *Cassell's Magazine* gives this remarkable view of the possessions and powers of the Earl of Dudley:—

"His territorial possessions and country seats in Staffordshire and Worcestershire, his shooting grounds in Scotland and the East of England, his mansion and picture-gallery in London, his winter palace at Rome, even his valuable mineral estate in Merionethshire, fade into insignificance when compared with his mines, and collieries, and ironworks in and around the Midland town from which he takes his title. This latter estate—honeycombed by industry beneath, blackened by industry on the surface—covers an area of ten square miles. It furnishes employment for 9,000 workpeople; and reckoning in their families, wholly supports, at a moderate computation, something like 27,000 human beings—a population equal to that of the city of Oxford at the last census. It is intersected by two private canals, and traversed by forty miles of railroad. The horses employed upon it are numerous enough to supply a cavalry regiment, the canal boats to furnish a fleet. The steam power used upon it is simply incalculable—it is so dispersed. Eight locomotives ply upon its railways; there are forty boilers in one of its works, and twenty in another; every pit and every furnace over and under the whole ten miles has its accompanying steam-engines. This vast estate yields 70,000 tons of coal and nearly 1,000 tons of pig-iron per week, to say nothing of the limestone used for flux; and it sends manufactured iron into all the markets of the world. Nearly 100 heads of departments are engaged in managing it, and it takes over three hundred clerks to keep the accounts. The annual outlay in wages does not fall far short of half a million of money."

We have lately heard of the possessions of the Marquis of Bute, and the time may be named when a future Marquis of Westminster will have an income of a million a year. There is surely matter for thought here: perhaps for action too.

——"Greater Britain." By Mr. C. W. Dilke. Mr. C. Wentworth Dilke, the author of "Greater Britain," a record of travel in English-speaking countries, which will be published in two volumes, by Messrs. Macmillan & Co., this week, is the eldest son of Sir C. W. Dilke, bart., M.P., and grandson of Mr. Dilke, whose name is well remembered in the literary world as the editor, and, indeed, the actual founder, of the *Athenæum*. The author of "Greater Britain" travelled during a portion of his journey with Mr. Hepworth Dixon, who was at that time in the United States gathering materials for his "New America." Mr. Dilke accompanied Mr. Dixon as far as Salt Lake City. Thence he travelled alone in New Zealand, Australia, and India—chiefly, we believe, with a view to observe the working of political systems in the countries which he visited. Mr. Dilke is now a candidate for a seat in Parliament as representative of the new borough of Chelsea, and very likely to be elected.

Miscellanea.

Joint-Stock Building, Brick, Tile, and other Companies.—From the returns of Joint Stock Companies in England and Wales, which have just been issued, we learn that there are 393 societies which have been registered between the 1st day of June, 1867, and the 31st day of May, 1868. Of this number thirty-five have been called into existence to erect houses, hotels, deal in land, and promote in other ways the building operations of the country. These societies are accredited with a nominal capital of 7,612,900*l*. In addition to these are eleven societies which have been registered for the purpose of manufacturing bricks, tiles, the getting of lime, slate, and other articles connected with the building trade. The nominal capital owned by the societies is set down at 315,000*l*., making, with the capital sunk in building, &c., 7,927,900*l*.

Improved Accommodation for the Working Classes.—*The Public Health* says,—The leaseholder of a large disused warehouse, in Little Grove-street, Lisson-grove, Marylebone, conceived the idea of converting the same into a convenient, airy, and capacious lodging-house. By forming a company, and issuing shares, he raised the necessary capital, and set about the work, which is now on the point of completion. The building is laid out in dormitories, comprising 130 single iron bedsteads; the floors are covered with cocoa-nut fibre matting, and the rooms are lighted with gas and well ventilated. There is a large kitchen, and lavatories and baths, on the most approved principles. The spirited proprietor even promises a library, to relieve the tedium of the winter months. The Medical Officer of Health for Marylebone has given his unqualified approval of the sanitary arrangements adopted in the establishment. We heartily wish success to this company, and as many others as shall devote their energies and their substance to the amelioration of the condition and elevating the *morale* of the working classes.

Associated Arts Institute.—Last Saturday evening the session of 1868-69 of this institute was opened by a *conversazione* at the House in Conduit-street. In addition to the usual display of works of art by the members of the institute, the sketches of the late Sir Richard Westmacott, of which we spoke previously, were exhibited on screens in the centre of the principal room. This being the first time that those sketches have been shown in public they were the subject of much interest and scrutiny. An address was made by the president of the institute, Professor Westmacott, R.A. In the course of it Mr. Westmacott pointed out the importance of students practising the separate branches of art, so as to arrive at a state of the utmost perfection, not for their own sakes alone, but with a view of realising a great whole. He also drew attention to the facts that the object of the Associated Arts Institute is to get artists together for the encouragement of mutual intercourse, and the discussion of those subjects in which they are interested, at times when they are not engaged in more practical work. Mr. Westmacott gave some particulars respecting the progress that the institute has made and its present position, foremost among them being that it is five years old, and that it commenced with five members, and it now can boast of 144. A concert followed the president's address.

The Havre Exhibition.—From an examination of the list of awards made at the Havre Exhibition to British exhibitors it appears that the British have reason to be satisfied with the success they have achieved.

Warehouses, Manchester.—A correspondent writes,—It may be as well you should say, with reference to the warehouses in Portland-street, from the designs of Mr. Waterhouse, to which you alluded lately, that the beams for the floors are not of cast iron, but of *rolled iron*,—an unusual feature of such dimensions in warehouses erected in Manchester.

A Bait.—Sir: What do you think of the following:—

"SURVEYOR WANTED, for a first-class established permanent building society. Must take paid-up shares in the society (6 per cent. dividend), and be prepared to introduce members and depositors from his own connexion.—Apply, stating sum to be invested, and probable amount of business that can be influenced, to ——"

A Sub.

Conservative Club House, St. James's.—This building, erected in 1845, has recently undergone entire renovation. The decorations of the halls (upper and lower), vestibule, and groined ceilings, have been revived: Mr. Sapwell was the contractor and Mr. Robert Yarrow the artist employed. The right person to be called in in such a case would seem to be the original artist. This is the second renovation since the foundation of the club twenty-three years ago.

Gas.—The directors of the Watton Gas and Coke Company have just issued a notice to the effect that "from and after the 10th of November next the price of gas to the consumers will be reduced one-fourth," that is, to 7*s*. 6*d*. per 1,000 ft. For many years the directors were not able, of course, with such absurd prices as theirs, to pay any dividend. The only wonder is that it is said they are now paying a fair one. ——New gas works, erected at Langley Mill, adjoining the railway station, by the Langley Mill and Heanor Gaslight Company (Limited), for the supply of gas to Langley Mill and Heanor, have been opened. The works have been designed and carried out under the superintendence of Mr. Thomas Crump, gas engineer, of Derby. The contractor for the building was Mr. Samuel Hunt, of Long Eaton. The Butterley Company supplied the castings and main pipes.

Value of Property in St. Paul's Churchyard.—At the Auction Mart, Tokenhouse-yard, Lothbury, Messrs. Debenham & Co., auctioneers, offered to public competition the freehold warehouse, No. 27, St. Paul's Churchyard, let on lease for an unexpired term of nineteen years at 1,000*l*. per annum, and now in the occupation of Government as the Post-office Savings Bank, the property occupying an area of 1,479 square feet. The highest bid was 20,000*l*., and it was bought in at 22,500*l*. The two adjoining warehouses, Nos. 28 and 29, held for an unexpired term of sixty-six years at a ground-rent of 750*l*. a year, and let for twenty-one years at 1,300*l*. per annum, were bought in at 8,000*l*. The corner warehouse adjoining, held for an unexpired term of sixty-six years at a ground-rent of 350*l*. a year, and let at ——, for the first seven years and 650*l*. for the next seven years, sold for 3,200*l*.

Monumental.—In the Chapel Royal, Savoy, there is a monument to the memory of Richard Lander, the distinguished African discoverer. A member of the Royal Geographical Society has bequeathed a small sum of money towards the restoration of the monument, and the Rev. Henry White, of King's College, London, the chaplain of the Savoy, has invited such as are disposed to add their subscriptions, so that the restoration may be carried out.——In a letter recently received from the west coast of South America, the writer mentions that Commodore Powell, and the officers on board H.M.S. *Topaz*, are to erect in the island of Juan Fernandez a tablet to the memory of Alexander Selkirk, whose history is popularly believed to have afforded De Foe the materials of his attractive story of Robinson Crusoe. The tablet is to be placed near a break in the high mountain ridge which rises from the bay at the northern part of the island. It is said that to that high pass Selkirk used daily to climb, in the hope of seeing some friendly sail that might convey him from his dread solitude. The tablet will be of iron. Whilst seeking for some one to do the lettering on the tablet, a man offered himself who rather claimed the job, on the ground that he had erected the tablet to Captain Cook's memory at the Sandwich Islands.

The Restoration of Chester Cathedral.—Dean Howson writes:—"Our appeal for funds in aid of our works of restoration began last spring. The architect's estimate for the whole amounts to about 55,000*l*. Towards this we have now about 28,000*l*. promised, the Ecclesiastical Commissioners contributing 10,000*l*. of this sum. The process of restoration began during the summer, attention being first given to a part of the fabric which was in imminent danger."

Albion Assembly Rooms, North Shields.—The proprietors of these rooms have determined upon making such additions to them as will not only greatly increase their own accommodation, but will also improve the frontage of Norfolk-street, by taking in the whole of the property between them and the Masonic Hall, and adding a new building, nearly 50 ft. in height, to contain a gallery; second and third class refreshment rooms, 37 ft. by 22 ft.; and, on the ground-floor, shops, &c. The architect is Mr. J. P. Spencer.

Boiler Explosions.—A terrible explosion has occurred at Mr. Norris's steam saw-mills, Baron's-place, Waterloo-road, Lambeth, injuring ten men and setting fire to the mills, which have been destroyed in consequence. One of the men injured has since died, and the others are in a precarious state. Surely there ought to be some Government inquiry into the subject of steam-boiler explosions, or some legislation with a view to the proper supervision of boilers. There is an association at Manchester for self-protection from boiler explosions, and the result to them is that scarcely a single explosion takes place in those supervised by the officers of the association.——The sufferers by the late kitchen-boiler explosion in the Haymarket are all doing well. One who was not expected to survive is now progressing favourably.

Closing of the National Fine Arts Exhibition at Leeds.—This exhibition, which was opened by the Prince of Wales, on May 19, was finally closed to the public on Saturday. During the 143 days it has been on view, the number of visitors has reached 570,000, and of that number 450,000 paid for admission at the doors, the remainder obtaining entrance by season tickets. The largest attendance was on Thursday, October 23, when no fewer than 13,231 persons entered the building. The highest weekly attendance was reached on the week ending October 16, when it amounted to upwards of 46,000 persons. On the proposition of Mr. W. Becket Denison, chairman of the executive committee, a vote of thanks was passed to the contributors. He especially referred to the warm interest taken in the exhibition by the Earl of Dudley and Lord Houghton. Both these noble lords having delivered brief addresses, special votes of thanks were awarded to heads of departments for their untiring zeal in the collection and arrangement of the art treasures; three cheers were given for the Queen; the band played the National Anthem, and the building was then slowly cleared of visitors.

Supply of Iced Water to Paris and London. Every one who has visited the *cafés* of Paris must have observed the *carafes frappées*, that is to say, water-bottles with a great block of ice, often very curiously crystallised inside. The production of those frozen decanters has become a very important operation, which is carried on at ice-houses situated in the Boulevard Lannes, on the Passy side of the Bois de Boulogne. The establishment, according to the "Journal of the Society of Arts," consists of ten great underground ice-vaults, protected from the action of the sun by buildings raised over them, and covered with straw. Each of the ice-vaults is nearly 500 ft. long, and about 36 ft. high, and the ten are capable of holding 10,000 tons of ice. The department in which the water-bottles are frozen is a curiosity. These decanters are two-thirds filled with filtered water in the receptacles of the freezing machine, and the freezing is produced by means of salt water and vaporised ether, with the help of a steam-engine of sixteen-horse power. When the water within the decanters is reduced below freezing-point, it is rapidly stirred with a stick, when the freezing takes place as if by magic. More than 6,000 of these frozen *carafes* are sent out daily in hot weather, at a very trifling charge, and each being filled up with fresh water as often as required will serve during a long summer day, and cool ten gallons of water. Why should not London and other large towns have their frozen water-bottles in summer as well as Paris?

ST. GEORGE'S HOSPITAL SURVEYORSHIP.—Mr. Stephen Salter has been elected surveyor to St. George's Hospital. Mr. Thomas H. Watson was second on the list.

SERJEANTS' INN.—The ancient state hall of Serjeants' Inn, Chancery-lane, under the auspices of the present treasurer, Mr. Serjeant Bain, has been redecorated and renovated.

WATERLOO BRIDGE.—We have received a letter from Mr. W. C. Clarke, Chief Clerk to the Waterloo Bridge Company, stating that the pier of the bridge, to which reference was made recently in our pages, has been in the state it now is for many years.

THE FALLING-IN OF THE FOOTWAY IN DOWNING-STREET, WESTMINSTER.—On the 30th ult., between seven and eight o'clock, nearly the whole of the public footway and hoarding which extends from King-street to the new Foreign Office, fell in with a crash. Fortunately no one was passing at the time, and the large number of workmen employed were all absent from the works.

ITALIAN OPERA, COVENT GARDEN.—Some good operas, by good performers, at this season of the year, are a boon to lovers of music, compelled for their sins to remain in London; and this Mr. Mapleson is affording, through the accommodating disposition of Mr. Gye, at Covent Garden. Beyond stock enjoyments he has made known to London a young singer from America, Miss Minnie Hauck, who in the "Sonnambula" produced a very satisfactory impression. Miss Hauck is very young, and if she fulfil her present promise will be a fresh delight for Europe. Signor Mongini sang admirably with her.

THE SMOKE NUISANCE.—At the Clerkenwell Police-court on Saturday a manufacturer was charged with using furnaces which did not consume their own smoke; and it was even alleged that they were constructed as if on purpose not to do so. The Government officer stated that this problem has now been most thoroughly and completely solved; and he mentioned a brewery which he inspected last week, in which were nineteen furnaces in full operation, consuming from 8,000 to 9,000 tons of coal, and from 700 to 800 tons of spent hops annually, and yet there was not a particle of smoke emitted. He also cited other similar cases. It thus appears that by a strict administration of the law the smoke nuisance may be got rid of entirely without hardship to those who require furnaces. The defendant was fined 3l. and costs.

TENDERS.

For new detached villas, at Worcester Park. Mr. Robert W. Edis, architect:—

Andrews	£1,336	0	0
Stephens & Watson	1,300	0	0
Brass	1,273	0	0
Rhodes & Roberts	1,269	0	0
Conder	1,255	0	0
Thomas & Son	1,239	0	0
Sharpington & Cole	1,197	0	0
Colls & Son	1,197	0	0
Lathey Brothers	1,196	0	0
Adamson & Sons	1,183	0	0
Collings	1,079	0	0
Shepherd	1,070	0	0
Longmire & Burge	1,026	0	0

For new entrance porch to St. Matthias Church, Richmond-hill. Mr. G. G. Scott, architect:—

Long (accepted)	£391	0	0

Accepted for house, at Ashton-on-Mersey. Mr. George Truefitt, architect:—

Brickwork.			
H. Davies	£480	0	0
Stonework.			
T. Kirkley	149	0	0
Joiner's Work, &c.			
Bowden, Edwards, & Co.	508	10	0
Plumbing, &c.			
J. Owen	155	0	0
Painting and Plastering.			
J. Owen	110	0	0
Slating.			
J. Kirkley	54	0	0
Bellhanging.			
D. Davies	11	5	0

For taking down and rebuilding two shops, Nos. 52 and 53, Artillery-street, Woolwich, for the executors of Mr. Thomas Stevens Burt, deceased. Messrs. William Gosling & Son, architects. Quantities supplied. The contractor to be allowed the old materials, and to use such bricks as the architect may approve:—

Woodford	£998	0	0
Hanks	900	0	0
Richardson & Thompson	850	0	0
Ginger	760	0	0
Vickery	755	0	0
Blake	750	0	0
Lidbetter	728	0	0
Carter	725	0	0

For rebuilding No. 299, Strand. Mr. J. R. Saunders, architect:—

Crabb & Vaughan	£1,327	0	0
King	1,296	0	0
Colls & Co.	1,280	0	0
Little	1,267	0	0
Pritchard	1,233	0	0
Perry	1,155	0	0
Tripp & Co.	1,087	0	0

For new corn warehouse, Strood, Kent. Mr. H. Andrews, architect:—

Wilkins & Son	£1,565	0	0
Baxter & Sageman	1,475	10	0
Ball & Co.	1,449	0	0
West	1,420	0	0
Clements	1,400	0	0
Sollitt	1,368	0	0
Naylar	1,347	0	0
Gates (accepted)	1,298	6	0

For new cottages, dairy, &c., at Worcester Park. Mr. Robert W. Edis, architect:—

Andrews	£819	0	0
Longmire & Burge	772	0	0
Rhodes & Roberts	765	0	0
Stephens & Watson	750	0	0
Thomas & Son	723	0	0
Sharpington & Cole	721	0	0
Brass	720	0	0
Conder	720	0	0
Colls & Son	692	0	0
Adamson & Sons	679	0	0
Lathey, Brothers	656	0	0
Collings	590	0	0
Shepherd	540	0	0

For villa residence, at Tonbridge. Mr. George P. Marten, architect. Quantities supplied by Mr. Samuel Cooper:—

Wheeler	£3,098	7	7
Holborn	2,734	15	0
Huntley	2,543	0	0
Gorrum	2,507	0	0
Smythe	2,500	0	0
Fawcett	2,467	10	0
Heaysham	2,419	18	0
Punnett	2,397	7	9
Dove	2,381	0	0
May	2,379	18	0
Kesterton & Head	2,370	0	0
Nightingale	2,345	0	0
Bayes	2,271	0	0
Wheatley	2,257	0	0
Strange	2,154	17	5
Woodroffe	2,138	0	0
Hunt (accepted)	1,975	0	0

For the first portion (viz., the chancel) of the new Church of St. Matthias, Earl's-court, Kensington. Mr. J. H. Hakewill, architect. Quantities supplied:—

Perrin, Brothers	£2,350	0	0
Cowland	2,240	0	0
Higgs	2,167	0	0
Myers & Sons	1,988	0	0
Saunders	1,950	0	0
Simpson	1,650	0	0

For bath-house, swimming-bath, &c., at Christ's Hospital, Newgate-street. Mr. John Shaw, architect:—

Axford & Whillier	£3,089	0	0
Piper & Co.	2,981	0	0
Holland & Hannen	2,862	0	0
Ashby & Horner	2,823	0	0
Brass	2,803	15	0
Newman & Mann (accepted)	2,562	0	0

For the erection of a villa residence, at Truro-road, Wood-green, for Mr. Charles Proughten. Mr. John Viney, architect:—

Brooks (accepted)	£600	0	0

For proposed new Methodist Free Church and schools, Woodford, Essex. Messrs. Hooper & Lewis, architects. Quantities by Mr. J. W. Tonge:—

Bayes	£2,011	0	0
Messrs. Patteneon	2,000	0	0
Rivett	1,983	0	0
Haines & Son	1,977	0	0
Hall	1,971	0	0
Mundy & Hutchinson	1,900	0	0
Shurmur	1,895	0	0
Crabb & Vaughan	1,868	0	0
Kemp & Morrisson	1,810	0	0
Mann, jun.	1,800	0	0
Wicks, Bangs, & Co.	1,778	0	0
Baker	1,695	0	0
Morter (accepted)	1,693	0	0

For mission chapel, Kensington, Derbyshire. Mr. J. Tait, architect:—

Warner & Son (accepted)	£262	0	0

For Congregational chapel, Derby. Mr. J. Tait, architect:—

Messrs. Herbert	£1,630	0	0
Bullock	1,447	0	0
Wright & Son	1,395	0	0
Stoddard (accepted)	1,358	0	0

For new Baptist Chapel, Shooter's Hill-road:—

	For Picked Stocks.	For Suffolk Facings.
Downs	£1,526	£1,576
Gerrard	1,500	1,544
Dove, Brothers	1,485	1,520
Manley & Rogers	1,450	1,510
Kirk	1,389	1,428
Cooper & Cullum	1,320	1,355
Wells	1,310	1,330

For new premises, corner of Fenchurch-street, for Mr. J. Greenbeam. Mr. W. Thompson, architect:—

Kirk	£9,490	0	0
Myers & Son	8,879	0	0
Bangs & Co.	8,600	0	0
Cooper & Cullum	8,398	0	0
Pritchard	8,111	0	0
Blackmoreland & Co.	7,783	0	0
Henshaw (accepted)	7,477	0	0
Crabb & Vaughan	7,377	0	0

For Congregational chapel and schools, Burton Joyce, Notts. Mr. J. Tait, architect:—

Charles Wright	£1,163	0	0
Wood & Son	1,113	2	0
Bell & Son	1,100	15	0
Moss	982	0	0
J. Wright & Son (accepted)	962	12	0

For rebuilding Nos. 27 and 28, Monkwell-street. Mr. B. Tabberer, architect:—

Larke	£2,387	0	0
West	2,200	0	0
Turner & Sons	2,076	0	0
Brass	1,997	0	0
Pearse	1,997	0	0
Brown & Robinson	1,997	0	0
Prince	1,985	0	0
Henshaw	1,890	0	0

For additions, &c., to house, Sevenoaks. Mr. B. Tabberer, architect:—

Willshire	£328	0	0
Grover	255	0	0
Larke	242	0	0

For alterations, &c., No. 7, King-street, Snow-hill. Mr. B. Tabberer, architect:—

Oatley	615	0	0
Clarke	512	0	0
Young	495	0	0
Pearse	463	0	0
Larke	459	0	0
West	446	0	0
Walker	384	0	0
Bostel	382	0	0
Whittingham	365	0	0

For the erection of new infant school, for the parish of St. Lawrence, Reading. Messrs. W. & J. T. Brown, architects:—

Matthews	£712	0	0
Barnicoat	690	0	0
Sheppard (accepted)	634	10	0

For the erection of a house and shop, in Broad-street, Reading, for Mr. Batho. Messrs. W. & J. T. Brown, architects:—

Kendell	£596	0	0
East	566	0	0
Sheppard	559	0	0
Carter	539	0	0
Clacey (accepted)	507	0	0

For the erection of a house and shop, in Broad-street, Reading, for Mr. Hiscock. Messrs. W. & J. T. Brown, architects:—

Whiting (accepted)	£498	0	0

For the erection of steward's residence, at Elvaston, for the Hon. the Earl of Harrington. Messrs. Stevens & Robinson, architects. Quantities supplied:—

Thompson	£1,390	0	0
Wood	1,350	0	0
Fryer	1,270	0	0

For alterations, repairs, and decorations, at No. 73, Grosvenor-street. Messrs. J. & E. Baddeley, surveyors:—

Clarke & Mannooch	£930	0	0
Sapwell	838	3	4
Scrivener & White (accepted)	819	0	0

For building presbytery, at Battersea, for the Right Rev. Dr. Grant. Mr. C. A. Buckler, architect:—

Nightingale (accepted)	£800	0	0

TO CORRESPONDENTS.

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